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ENCYCLOPAEDIA ASIATICA

ENCYCLOPAEDIA ASIATICA

Comprising

INDIAN SUBCONTINENT
EASTERN AND SOUTHERN ASIA

Commercial, Industrial and Scientific

By

EDWARD BALFOUR

IN NINE VOLUMES

VOL. VII. O-RHAMNEAE



COSMO PUBLICATIONS
NEW DELHI **INDIA**

COSMO PUBLICATIONS

24-B, ANSARI ROAD, NEW DELHI-110002.

The present work was originally published with the title "Cyclopaedia of India and of Eastern and Southern Asia" in 1858 and after an edition in 1873, was completely revised in 1884. The present edition which is released with the title 'Encyclopaedia Asiatica,' is a reprint of that revised edition and contains prefaces to First, Second & Third editions, which were not available in the last edition.

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PREFACE TO THE FIRST EDITION

Whilst we find books of reference in most departments of sciences and literature in connection with European countries, daily becoming cheaper and more abundant, those who investigate and seek for information regarding the sources of British India, or any of the Scientific and economic subjects connected with Eastern Countries, still meet with much difficulty and hindrance, owing to the necessity of consulting numerous authors whose works are scarce or costly. And as some inquirers are without the pecuniary means of procuring all the requisite books and Journals, or find it impossible to procure them at any cost, whilst others want leisure or opportunity for such extensive research, it is evident that progress in these branches of knowledge would be greatly facilitated, by collecting and condensing this widely dispersed information, thereby enabling future inquirers to gain some acquaintance with the results of the investigations made by the many diligent and laborious individuals, who have devoted a great portion of their time to collecting information over the vast areas of Southern Asia.

My avocations while employed in India, more particularly in the past seven years, have rendered necessary for me a collection of books of reference relating to India and the East, somewhat more numerous and varied in character than private individuals generally possess ; whilst my employment a Secretary to the Madras Central Committees for the Great Exhibition of 1851, the Madras Exhibition of 1855, the Universal Exhibition held in 1855, in Paris, and the Madras Exhibition of 1857, combined with my duties (since 1851), as Officer in Charge of the Government Central Museums, have brought under my notice a rare variety of Eastern products and subjects of interest; and thinking that, before quitting the countries in which I have dwelt for nearly a quarter of a century, I might, with advantage leave to my successors in a portable form, the notes made on the products of the East that have come under my notice, combined with an abstract of useful information respecting these contained in my books, I have been led to show the results in the present shape.

A work of this aim and character might doubtless fully occupy the life time of several men attainments ; and this Cyclopædia of India and Eastern and Southern Asia, may therefore be regarded only as a first attempt towards the kind of book, the want of which has been long and generally felt. But although fully conscience of its incompleteness in many respects, yet, I trust it may still

be received with all imperfections and omissions, as a useful and opportune addition to Asiatic literature ; at least by those who recognize the greatness of the saying of Emmerson, that "the thing done avails, and not what is said about it; and that an "original sentence, or a step forward, is worth more than all the censors"* which may be made by such as are disposed to find fault, or who would demand in a work of this kind, a degree of perfection unattainable on a first trial.

The book is merely a novelty in form, the matter it contains being as old as our possessions in India : it is simply a compilation of the facts and scientific knowledge, which authors and inquirers have been amassing and communicating since then, to one and another and the public. But, "in our time, the higher walks of literature have been so long and so often trodden, that whatever any individual may undertake, it is scarcely possible to keep out of the foot steps of his precursors",† and this Cyclopædia. I may, therefore, avow to be put an endeavour to make generally available, in a condensed form, the information acquired by those who have in any way investigated the natural, or manufactured products of Southern Asia, or have at any time made its arts or natural history the subjects of inquiry. Some of those whose writings I have made use of, have long since gone to their account, but many a labourer yet alive may find the result of his labours embodied here ; and I have done this freely, because even those whose writings I have most largely drawn, will acknowledge that the quaint old lines of Chaucer†† still apply with full force; viz. that,

"Out of the old field, as man sayeth,
Cometh all his new corn fro' year to years;
So out of old books, in good faith,
Cometh all this new Sciences that men lere"

Indeed, I have rather sought to collect and condense accurate and well ascertained facts than to present novelties; for originality is but too often unconscious or undetected limitation. Byron, years ago, remarked that all pretensions to it are ridiculous; and a wiser one than Byron has told us that "there is nothing new under the sun." But if there be nothing absolutely new in this work, I hope it may yet be found to contain much which to many was unknown before; and which for want of books, liesure, or opportunity, may have debarred them from learning.

The Cyclopædia is not intended to comprise the whole Science of Botany, nor that of Medicine or Zoology; nor to instrust in all the matters useful in Commerce or the Arts; but, whether examined for information or amusement, the botanist, the medical practitioner, the naturalist and the merchant,

*English Traits p. 5

†Salad for the Social, p. 317

††Ibid, page 321.

may perhaps each find something in it which, from his engagements he did not know before, or though once knowing he may have again forgotten. In both cases, the work may prove useful, since old thoughts are often like old cloths; put away for a time, they become apparently new by brushing up. It would have been better perhaps, had a work of this kind been undertaken years ago, or even now were it made the joint effort of several persons : indeed, to render it in any way complete, would call for the resources at the command of a Government rather than of individuals; but we cannot have every thing at the time we wish, nor in the way we wish, and it is better to have some one undertake it and do it the best way he can, now, than to postpone it to some further indefinite period.

With a view therefore of laying a foundation as a starting point for future inquirers, I now undertake the commencement of a work, towards which I hope to receive from many quarters aid and support as I proceed : being thereby enabled either to produce future enlarged and improved editions of the work my self, placing it, as I hope, within the reach of all, or seeing that task taken up here after, by younger men, with more time and opportunities than are now before me. A dinner of fragments is often said to be best dinner, and in the same way, there are few minds that might furnish some instructions and entertainment, from their scraps, odds and ends of knowledge. Those who cannot weave a uniform web, may atleast produce a piece patchwork; and any items of information sent to me will be very acceptable.

There is another difficulty which inquirers in this country have had to meet and struggle with ; I allude to the many languages and dialects in use in India and Eastern Asia, and subsequently the variety of scientific, national, or even local names, by which the same thing is known. The only means of overcoming this difficulty was to frame a copious index of Contents; for Pope has well said that,

•• “Index learning turns no student pale,
yet holds the eel of science by the tail.”

This Indexing will add to the bulk of the book, but greatly also to its value as a work of reference; and will be carefully completed.

PREFACE TO THE SECOND EDITION

The first edition with its two Supplements contained 29,870 names and the work was favourably received by the public and press. But my acquaintance with these countries did not permit me to regard that number as other than a foundation for an enlarged and improved edition, and this second edition will contain about 100,000 names, under which much connected with India and with Eastern and Southern Asia will be found.

I have spared neither time nor labour to make the present edition as perfect as possible, but a Cyclopedia must necessarily ever be progressive.

1871

Edward Balfour

PREFACE TO THE THIRD EDITION

THE first edition of this Cyclopædia was published in 1858 in India, the second, also in India, in 1873, and the years 1877 to 1884 inclusive have been occupied in revising it for publication in England. During this process, every likely source of further information has been examined, and many references made. I am under obligations to many learned men, to the Secretariat Officers of the Indian Governments, and to the Record and Library Officers of the India Office, Colonial Office, and British Museum, for their ready response to my applications for aid.

This edition contains 35,000 articles, and 16,000 index headings, relating to an area of 30,360,571 square kilometers (11,722,708 square miles), peopled by 704,401,171 souls. In dealing with subjects in quantities of such magnitude, oversights and points needing correction cannot but have occurred; but it is believed that errata are not many, and will be of a kind that can be readily remedied.

It is inevitable that difficulties in transliteration should be experienced, owing to the variously accented forms which some words assume even among tribes of the same race, also to the different values accepted in many languages for the same letters, and especially to the want of correspondence in the letters of the several Eastern alphabets; but in this work traditional and historical spelling has not been deviated from, and the copious Indices will guide to words of less settled orthography.

Men of the same race, habits, and customs, plants and animals of the same natural families, genera, and even species, are so widely distributed throughout the South and East of Asia, that local histories of them are fragmentary and incomplete. India in its ethnology, its flora and fauna, can therefore only be fairly dealt with by embracing a wider area. This is the reason why the Cyclopædia and my work on the Timber Trees include all Eastern and Southern Asia, the regions, the areas and populations of which may be thus indicated :—

PREFATORY NOTICE.

INDIA, EASTERN AND SOUTHERN ASIA.	SQUARE KILOMETERS.	POPULATION.
Caucasus, Russian,	472,666	5,546,554
Trans-Caspian, do.	327,068	203,000
Central Asia, do.	3,017,700	5,036,000
Independent Turkoman Region,	206,500	450,000
Khiva,	57,800	700,000
Bokhara, Thignan, Karategin, etc.,	239,000	2,130,000
Arabia,	3,156,600	5,000,000
Persia,	1,647,070	7,653,000
Afghanistan and Provinces,	721,664	4,000,000
Kafiristan,	51,687	500,000
China Proper,	4,024,690	350,000,000
China Provinces,	7,531,074	21,180,000
	11,555,764	371,200,000
Corcea,	236,784	8,500,000?
JAPAN AND PROVINCES,	382,447	36,357,212
British India and Feudatories,	3,774,193	252,541,210
Nepal, Bhutan,	234,000	3,300,000
French India,	508	276,649
Portuguese India,	3,355	444,987
Ceylon,	24,702	2,606,930
FURTHER INDIA—		
British Burma,	229,351	3,707,646
Manipur,	19,675	126,000
Tribes south of Assam,	65,500	200,000
Burma, Independent,	457,000	4,000,000
Siam,	726,850	5,750,000
Annam,	140,500	21,000,000
French Cochín-China,	59,456	1,597,013
Cambodia,	83,861	890,000
Malacca, Independent,	81,500	300,000
Straits Settlements,	3,742	390,000
ISLANDS—		
Andamans,	6,497	14,500
Nicobars,	1,772	5,500
Sunda Islands, Moluccas,	1,693,757	28,867,000
Philippines, Spanish Indies,	296,182	6,300,000
Netherland India,	677,038	27,154,054
New Guinea and Papuan Islands,	785,362	807,956
British Northern Borneo,	57,000	150,000
Australia, . . . . .	...	2,193,200
Tasmania, . . . . .	...	115,705
New Zealand, . . . . .	...	489,933
Total, excluding Australia, Tasmania, and New Zealand,	30,360,571 sq. kil. 11,722,708 sq. m.	704,401,171

I am under obligations to Messrs. Morrison & Gibb for their careful press-work. All that their art could do has been done to aid me in keeping the work in a compact form.

EDWARD BALFOUR.

2 OXFORD SQUARE, HYDE PARK,
LONDON, 24th May 1885.

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VOL. VII.
O-RHAMNEAE

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0

O is the fifteenth letter and fourth vowel of the English language, in which it has several sounds,—long as in tone, grown, old; short as in lot, not, lodge, rot; a sound as of the Italian or German u or the French ou, as in move, do, booty; a similar but shorter sound, as in wolf, boot, foot; and a longer sound, as in form, mortal. In Sanskrit, o, like e, is always long, but in the southern dialects there is a still more prolated quantity of it.

OAK.

Ballut,	ARAB.	Dab,	POL.
Eeg,	DAN.	Carvalho,	PORT.
Eik,	DUT.	Roble, Carbalho, PORT., SP.	
Chene,	FR.	Dubb,	RUS.
Eiche,	GER.	Ek,	SW.
Drus, Balamia,	GR.	Meyashe,	TURK.
Quercia, Quercus, IT., LAT.			

The genus *Quercus* of plants embraces about 150 species, many of them tropical plants, not only abounding at low elevations in the mountains, but descending in abundance to the level of the sea. Though not known in Ceylon, the Peninsula of India, tropical Africa, or South America, they abound in the hot valleys of the Eastern Himalaya, East Bengal, Malay Peninsula, and Indian islands, where perhaps more species grow than in any other part of the world.

In the tract of country from Asia Minor along the north of Persia to China and Japan, also in the Tenasserim provinces, several oaks occur, but in the presence of other valuable timber trees their woods do not attract the same attention as that of English oak. An oak is mentioned in the Hebrew Scriptures, but it is not identical with the British oak, being either the holm oak or evergreen oak (*Quercus ilex*), or a species nearly resembling it. Near Shechem, also, there stood a tree of the same genus, which probably was remarkable for its size, being called in Genesis xxxv. 4, 'the oak which was by Shechem.' In the war of 1812 to 1814, the people of Spain and the French both frequently fed on the acorns in the woods of Portugal and Spain. In Morocco and Algiers, the acorns of *Quercus ballota* are sold in the public markets; and the acorns, 'balut,'

of some of the oaks are met with in all the Indian bazars. Gamble names 39 species. See *Quercus*. Wallich found *Q. fenestrata*, *turbinata*, *velutina*, *Amherstiana*, *Tirrbæ*, growing in Burma and on the Tenasserim coast, all affording useful timber, though inferior to the English oak. No oaks nor chestnut ascend above 9000 feet in the interior of Sikkim, where they are replaced by a species of hazel (*Corylus*); in the North Himalaya, on the other hand, an oak (*Q. semecarpifolia*) is amongst the most alpine trees, and the nut is a different species, more resembling the European. On the outer Sikkim ranges, oaks (*Q. annulata*) ascend to 10,000 feet, and there is no hazel.

There are three species of oak in the Sutlej valley.—*Quercus incana*, 'ban;' common hoary oak, *Q. semecarpifolia*, 'karsu;' *Q. dilatata*, 'morhu,' which are next in importance to the pines. Vast forests of them occur in various places, as on the east side of Hattu, on the upper track between Muttiana and Nagkanda, in Mandi, Sukhet, etc. The trees are of great size, 80 to 100 feet in height; they prefer dry situations, and are not generally convenient to the river. The logs do not float the first and second years, being in this respect like the black-wood of Malabar. Oak wood has been well reported of by General Cautley at Murree. Oak bark, in Europe, is largely used as a tanning material, and the *Quercus* suber of Spain furnishes the cork of commerce. It might be introduced into India. The Australian forest oak, she oak, and swamp oak are species of *Casuarina*. In N. America, the red oak, *Q. ruber*, and *Q. aquatica*, occur. Oak galls are produced on different species of oak by the female of the *Cynips* or *Diplolepis* piercing the buds, leaves, and twigs, and depositing its eggs. They are produced on the *Quercus infectoria*, *Q. ballota*, *Q. incana*, and others.—*St. John's Forest Trees*; *Mason*; *Wight*; *Hooker*; *Low*.

OAKUM. Pakal, Pamakal, MALAY. Ropes and other fibrous substances pulled loose, and used in the caulking of sailing vessels. Oakum in China is made of the baru, a gossamer-like substance found at the base of the petioles of the *Arenga saccharifera*.—*Faulkner*.

OANT. HIND. In Central India, accommodation bills. These are termed, on the faces of the

bills, Chelān or current, in opposition to Rokra or ready-money bills. The person who accepts these from the drawers, enters the amount against him in his books at interest.—*Malcolm's India*.

OASIS, a fertile portion of land in the deserts of Africa, Arabia, Persia, and India. Hugh Murray derives this word from the Egyptian, and, quoting Strabo and Abulfeda, makes it synonymous with Auasis and Hyasis; but it is believed by some that it may be a corruption of the Arabic word Wady. A wady is, generally speaking, a rocky valley bisected by the bed of a mountain torrent, dry during the hot season; or any low-lying ground. In such places the Bedouins love to encamp, because they find forage, and water is always procurable by digging. Petra is at the Wadi Musa; Wadi-al-Ghor is south of the Dead Sea; and Wadi-al-Mah, S.E. of Aleppo, is the Salt Lake.

OATH, Kasm, Half, Sogund, HIND., is a religious affirmation, an appeal to witness of the Supreme God. The British races have, in England and Ireland, the custom of kissing the book, pronouncing the words 'so help me God.' The French custom raises the hand, as in Genesis xiv. 22, Deuteronomy xxxii. 40. Jeremiah v. 7 forbids swearing by idols; and in 1 Samuel i. 26, the soul (or life) of the exalted man is invoked. The Greeks and Romans swore by their tutelary gods, and the mediæval Christians by their guardian saints. The oath taken by the servant of Abraham (Genesis xxiv. 2-9) was completed by the servant passing his hand under Abraham's thigh, and Arabs still swear so. The oath administered to the person who erects the boundary pillars, if a Hindu, is the ganga-jul, or the chour or raw hide of the cow, or swearing by his son. By Hindus, the leaves of the tulsi and water are swallowed after an oath. A Muhammadan is sworn on the Koran, or by placing his hands on his son's head. To a Hindu, the chour, and swearing by his own child, are the most binding. The Gao, a cow oath, is by a Hindu swearing while holding a cow's tail; Brahmani oath by swearing while touching the feet of a Brahman.

Among the Kandh race of Orissa peacocks' feathers are used. They are also sworn on the skins of tigers or lizards, also on an ant-hill.

The oath of the Pahari in the Bhagulpur ranges was by planting two arrows in the ground, in the form of the letter A reversed, and the person swearing took in his hand the blade of one and the feather of the other. On solemn occasions salt was put on the blade of a sword, and, after the words of the oath are repeated, the blade being placed on the under lip of the person sworn, the salt is washed into his mouth by the person administering it.

In the Book of the Oath, which a Burmese witness places on his head in swearing, one of the numerous imprecations which it contains is, 'All such as do not speak truth, . . . if they travel by water, whether in ships or boats, may they sink, or may they be bitten or devoured by crocodiles.'

Amongst the Abor, the Sengmaung, an interchange of meat food inviolably cements an oath. Dyak and Kyan races in Borneo cement an oath by the parties tasting each other's blood.

The Ojla clan of the Bhil will not use as food any animal with a white skin or white feathers, and their most sacred oath is to swear by a white

ram. All Hindus, in British courts of justice, are sworn by placing in their hands a leaf of the tulsi, *Ocimum sanctum*, and a few drops of water from the Ganges, which they transfer to their mouths and swallow.—*Heber*, i. p. 281; *Hist. of Panjab*, i. 151; *Yule*, p. 24.

OATS. *Avena sativa*, L.

Tsioh-meh, Ye-me, CHIN.	Vena, Avena, . . . Ir., Sp.
Havre, Haver, DAN., DUT.	Owies, POL.
Avoine, FR.	Avea, PORT.
Hafer, GER.	Ovyoss, Owes, . . . RUS.
Bromion, Bromos, . . GR.	Haftro, SW.

The oat (*βρώμος* of Dioscorides) was known to the Greeks. The oat is distinguished among cereal grains by its loose panicle. It is a native probably of the Persian region, but several varieties are cultivated in Europe. The grains of oat when deprived of their integuments form groats; when these are crushed, emulden and prepared groats; when the grain is kiln-dried, stripped of its husk and delicate outer skin, and then coarsely ground, it constitutes the oatmeal of Scotland. The husk, with some adhering starch from the seed, is sold under the inconsistent name of seeds. Groats and oatmeal are nutrient and demulcent. When boiled with water (3 oz. to 1 pint, boiled down to $\frac{1}{2}$ a pint), gruel is formed, which is useful as diet for the sick. Oatmeal, when of thicker consistence, forms porridge. Oats are in demand for horses in Britain. It is the hardest of all the cereal grains cultivated in Britain. Oats were introduced into Patna and Monghyr, but the cultivation was not carried on to any great extent. In 100 parts—moisture, 13.52; nitrogenous matter, 10.13; starchy matter, 68.75; fatty or oily matter, 3.63; mineral constituents (ash), 3.93.—*Royle*; *Hassall*; *Cat. Ex.* 1862.

OBEID-ALLAH (Abid Allah), claiming descent from Fatima, daughter of Mahomed and wife of Ali, in A.D. 910 made himself master of Egypt, and succeeded in establishing himself as a rival of the Abbasi Khalif at Baghdad. The doctrines, founded on the old Magian faith, which had from time to time appeared among the Shiah Persian party, were now openly professed, under the name of Ismaileyeh, by the Alavi or Fatimite Khalifs and their followers, and were propagated by official agents, of whom the chief was called Dai-ud-Du'at, or supreme missionary; and associations, not unlike freemasonry in constitution, were founded, and held lodges in Cairo under the name of Majalis-ul-Hikmah, or scientific lodges.

OBLATIONS or offerings have always formed an essential part of public worship and private piety. Jeremiah xiv. 17 says, 'To burn incense unto the queen of heaven, and to pour out drink-offerings unto her.' The Hindus pour out water to the sun three times a day, and to the moon at the time of worshipping this planet. Hindus have many deities and spirits to which they make oblations.

Amongst Hindus, kula means a family, a race, a tribe. Properly the got of a Hindu is his tribe, and kula is the race. But kula among the Rajputs means a tribe, and corresponds to the Afghan khel. Amongst the Hindus there are three kinds of devata or deities to whom worship is given,—the Gramma-deva, or village god; the Kula-deva, the race, household, or family god; and the Ista-deva, the patron or personal deity

of individuals. *Adi-deva* is the primitive deity; *Sthana-deva*, local deity. The *Aryan Hindu* does not recognise the village gods of Southern India, but the non-Hindu Turanian races largely worship them, and even many of those Turanian races who have been converted to Hinduism worship them. They are mostly shapeless pieces of wood or stone smeared with vermilion, and often represent evil spirits or devils. These are the *Amma*, *Ammun*, and *Amur* of the eastern and southern parts of the Peninsula, and the *Satwai*, *Bhairo*, *Massoba*, *Chamanda*, *Asra*, *Ai*, *Marri-ai*, etc., of the northern and western parts of the Peninsula, all of whom are recognised as causing harm to individuals. In health they are neglected; but when sickness occurs, either to individuals or as an epidemic, these spirits of evil are worshipped with much solemnity, and bloody sacrifices are made to them, of goats and sheep, and bullocks and buffaloes. *Gotra* and *kula* mean a family, and they existed amongst *Kshatriya* and *Vaisya* as well as *Brahmans*. The *gotra* depend on a real or imaginary community of blood, and then correspond to what we call families. No Hindu house is supposed to be without its tutelary divinity, but the notion attached to this character is now very far from precise. The deity who is the object of hereditary or family worship, the *Kula-deva*, is always *Siva*, or *Vishnu*, or *Durga*, or other principal personage of the Hindu mythology; but the *Grha-deva*, or household god, rarely bears any distinct appellation. In Bengal, the domestic god is sometimes the *saligram*, sometimes the *tulsi* plant, sometimes a basket with a little rice in it, and sometimes a water jar, to any of which a brief adoration is daily addressed, most usually by the females of the family. Occasionally small images of *Lakshmi* or *Chandi* fulfil the office, or, should a snake appear, it is worshipped as the guardian of the dwelling. In general, in former times, the household deities were regarded as the unseen spirits of ill, the ghosts and goblins who hovered about every spot, and claimed some particular sites as their own. At the close of all ceremonies, offerings were made to them in the open air, to keep them in good humour, by scattering a little rice with a short formula. Thus at the end of the daily ceremony, the householder is enjoined by *Menu*, 3. 90, 'to throw up his oblation (*bali*) in the open air to all the gods, to those who walk by day and those who walk by night.' In this light the household gods correspond better with the *genii locorum* than with the *lares* or *penates* of antiquity.

The Hindu now, as did the Greeks and other nations of antiquity, always make offering of the first portion of each meal to the gods. *Anna-deva* is the goddess of food.

The Hindu householder, after pouring libations to the gods, sages, and progenitors, is to offer to *Brahma* oblations, with fire, not preceded by any other rite, with such ceremonies and in such form as are adapted to the religious rite which is intended to be subsequently performed.—*Wilson, Hindu Theatre; Tod's Rajasthan*, i. p. 337.

OBSERVATORY. Of these, there is one at Cape Town, in lat. 33° 56' 35" N., and long. 18° 28' 45" E.; also one at Madras, in lat. 13° 4' 6" N., and long. 80° 17' 22" E.; one at Batavia, in lat. 6° 8' S., and long. 106° 50' 50" E.; one

at Bombay, and one at Trevandrum, capital of the Travancore kingdom.

OCEAN.

Bahr, Bahr-ul-mahit, . . .	AR.	Samudra, . . .	SANSK., TEL.
Weltmeer, . . .	GER.	Oceano, . . .	SP.
Kala-pani, Darya, . . .	HIND.	Samandr, . . .	TAM.
L'oceano, . . .	IT.	Dengiz, . . .	TURK.

The south and east of Asia is girt by the ocean, portions of which are known as the Red Sea, the Persian Gulf or Bahr-ul-Fars, the Arabian Sea, or N. Indian Ocean, the S. Indian Ocean, the Bengal Bay, and the Pacific. *Edrisi* says, 'The Ocean Sea is called the Dark Sea, because it is dark, and is almost always in commotion with violent winds, and covered by thick fogs.' So to the ocean near land the Arabs give the name of *Bahr-ul-Khazr*, or Green Sea; and the natives of India generally style the Great Ocean as the *Kala pani* or Black Water.

Surrounding the coasts of Southern Asia, patches of the waters become occasionally crimson, brown, black, or white, which, especially in the Indian Ocean, occasionally extend as far as the eye can reach. These are caused by organic matter, but whether it is wholly animal or wholly vegetable, or both, has not been satisfactorily ascertained. The water from pink-stained patches has been found to contain animalcules. The Red Sea has been supposed to be named from the quantities of slimy red colouring matter which it at certain times throws up on its shores, and which consists of a delicate seaweed. Along the coasts of China, yellowish spots are said not to be uncommon, and red and white patches occur on the waters of the Pacific. In lat. 8° 46' S., and long. 105° 30' E., Captain Kingman entered a white patch at dusk; he filled a tub with the water, and found it filled with luminous particles, insects and worms, some like a hair, and about two inches long. This patch was 23 miles in length, north and south, with a strip of dark water dividing its centre. The whole appearance was that of a plain covered with snow. There was scarcely a cloud, but the sky was as black as if a storm was raging. A red water was seen by *M. Lesson* off Lima; and in the vicinity of California there occurs a phenomenon which has been called the 'Vermilion Sea.' *Sir E. Tennant* has described changes in the sea around Ceylon of similar hue, and which he ascertained to be owing to the presence of infusorial animalcules. The Red Sea is a riverless and rainless region, and its waters are heavier than any other mere arm of the ocean. The saltiest part is in the Gulf of Suez; the saltness diminishes south of Socotra, and again increases eastwards to Bombay; the temperature of its waters for three or four hundred miles from the Straits has been found as high as 95°. This is probably caused by the slight evaporation, as the more saline a fluid is the slower is its evaporation. The observations as to the rate of evaporation on shore have led to many extravagant estimates as to the rate at sea. The mean annual fall of rain on the entire surface of the earth is estimated at about five feet. The area of the Indian Ocean north of the equator, including the Arabian Sea and Bay of Bengal, is about four millions of square miles. The rivers of India are fed by the monsoons, which have to do their work of distributing their moisture in about three months. Thus we obtain 0.065 inches as the average daily

rate of effective evaporation from the warm waters of the N. Indian Ocean. If it were all rained down upon India, it would give it a drainage which would require rivers having sixteen times the capacity of the Mississippi to discharge. Nevertheless the evaporation from the North Indian Ocean required for such a flood is only one-sixteenth of an inch daily throughout the year. The total amount of evaporation that annually takes place in the trade-wind region generally at sea, according to Maury's estimate, does not exceed four feet.

The water of the Indian Ocean is warmer than that of any other sea, therefore it may be inferred that the evaporation from it is also greater. The N. Indian Ocean contains about 4,500,000 square miles, while its Asiatic watershed contains an area of 2,500,000. Supposing all the rivers of this watershed to discharge annually into the sea four times as much water as the Mississippi discharges into the Gulf of Mexico, we shall have annually on the average an effective evaporation from the North Indian Ocean of 60 inches, or 0.0165 per day. The waters of the Indian Ocean are hotter than those of the Caribbean Sea, and the evaporating force there is much greater.

Sir John Herschel gives to the winds the entire right of setting the ocean streams in motion; Lieutenant Maury holds the universal circulation of the sea to be caused by nothing else than the difference in its specific gravity; and Dr. Carpenter (or rather Professor Buff) would bring about a general interchange of polar and equatorial water by the aid of sunshine and frost alone.

These two facts, taken together, tend to show that large currents of warm water have their genesis in the Indian Ocean. One of them is the well-known Mozambique current, called at the Cape of Good Hope the *Lagulus* current, which skirts the coast of Natal. Another of these warm currents from the Indian Ocean makes its escape through the Straits of Malacca, and, being joined by other warm streams from the Java and China Seas, flows out into the Pacific between the Philippines and the shores of Asia. Thence it attempts the great circle route for the Aleutian Islands, tempering climates, and losing itself in the sea as its waters grow cool on its route towards the north-west coast of America. Near the shores there is a counter-current of cold water.

There is sometimes, if not always, another exit of warm water from the Indian Ocean. It seems to be an overflow of the great intertropical caldron of India; seeking to escape thence, it works its way polarward more as a drift than as a current. It is to the Mozambique current what the northern flow of warm waters in the Atlantic is to the Gulf Stream. This Indian overflow is very large. The best indication of it is afforded by the sperm whale curve. In shore of, but counter to, the 'black stream,' along the eastern shores of Asia, is found the cold current of Okhotsk, a streak or layer or current of cold water answering to that between the Gulf Stream and the American coast. This current, like its fellow in the Atlantic, is not strong enough at all times sensibly to affect the course of navigation, but, like that in the Atlantic, it is the nursery of most valuable fisheries. The fisheries of Japan are nearly as extensive as those of Newfoundland, and the people of each country are indebted for their valuable supplies of excellent

fishes to the cold waters which currents of the sea bring down to their shores. There are also about the equator in this ocean some curious currents, which Maury called the doldrum currents of the Pacific, but which he says he does not understand, and as to which observations are not sufficient yet to afford the proper explanation or description. There are many of them, some of which at times run with great force. On a voyage from the Society to Sandwich Islands, Lieutenant Maury encountered one running at the rate of ninety-six miles a day. These currents are generally found setting to the west. They are often, but not always, encountered in the equatorial doldrums on the voyage between the Society and the Sandwich Islands. The Pacific Ocean and the Indian Ocean may be considered as one sheet of water, covering an area quite equal in extent to one-half of that embraced by the whole surface of the earth. There is also at times another warm current running to the south midway between Africa and Australia, of which the whales give indications. These convey immense quantities of highly saline water, which has to be replaced by colder water. The Aleutian Islands are in the tract of the current from the Straits of Malacca. They are as subject to fogs and mists as the banks of Newfoundland. No trees grow on them, and for all household purposes the natives depend on the drift-wood, amongst which camphor-wood and woods of Japan and China are often seen.

The Japan Stream, known as the Kuro-Siwo, sweeps along the outer or eastern shores of the Japanese Islands. This stream carries with it the gulf-weed or Sargossa, with many animal forms, such as *Clio*, *Cavolina*, *Pteropoda*, *Spirialis*, *Atlanta*, and the Pelagian skeleton shrimps, *Alina* and *Erichthys*; also the carapaces of the sail-crab called *Planes*. Near Japan a current runs in a thin layer in shore similar to that between the Gulf Stream and the American coast, and, like it, is the nursery of many valuable fisheries. It is in the cold waters which the currents of the ocean bring to its shores that the people of Japan obtain their supplies of fish, there as abundant as those of Newfoundland.

The great equatorial current of the Pacific, when it reaches the south end of Formosa, passes off into the China Sea, while the other part is deflected to the northward along the eastern coast of Formosa until reaching the parallel of 26° N., when it bears off to the northward and eastward, washing the whole S.E. coasts of Japan as far as the Strait of Taugar, and gaining in strength as it advances. This is called the Kuro-Siwo, or Japan Stream; and near its origin this stream is contracted, and is usually confined between Formosa and the Meiao-Sima group of islands, with a width of nearly a hundred miles; but to the northward of the latter it rapidly expands on its southern limit, and reaches the Loo-Choo and Bonin Islands, attaining a width to the northward of the latter of about 400 miles. Its average maximum temperature is 86°. The N.W. edge of the stream is strongly marked by a sudden thermal change in the water of from 10° to 20° but the S. and E. limit is less distinctly defined, there being a gradual thermal approximation of the air and water. Along the borders of the stream, where it chafes against the counter-currents and torpid waters of the ocean, as also in its midst, where

whirls and eddies are produced by islands and the inequalities in its bed, strong tide rips are encountered, often resembling heavy breakers on reefs or shoals. Its average velocity, between the south end of Formosa and Tsgaur Strait, has been found to be from 35 to 40 miles in 24 hours. Off the Gulf of Yezo, its maximum strength is recorded as high as 72, 74, and 80 miles respectively on three successive occasions; but local causes give rise to changes in its velocity and its direction. To the northward of lat. 40° N., in long. 143° E., there is a cold counter-current intervening between this stream and the south coast of Yezo, as shown by the sudden thermal change of the water from 16° to 20°, which it is believed sets to the westward through the Strait of Tsgaur. The waves of the ocean vary in height, but rarely rise over 16 feet above the level. In the Indian Ocean, the tide follows the moon to the west with a somewhat northerly course.—*Maury's Phys. Geo.; Maury, United States Sailing Directions; Wilson's Science of Ship-building; Adams*, pp. 240, 318; *Horsburgh; Captain Taylor; Heathcote; Tennant's Ceylon; Findlay; Buist.*

OCHNA SQUARROSA. *Linn.; Roxb.*

H'sen, H'sen-way, BURM. Sunnri Tammi-Kunuk-champa, SANSK. chettu, . . . TEL. Salanthi maram, . . . TAM. Yerra-juvi, . . . "

A small but handsome tree, growing in the mountainous parts of India. Leaves deciduous in the cool season, and appear with the sweetly-fragrant flowers in February and March. *O. nana*, *Buch.*, occurs in Gorakhpur; *O. Wightiana*, *Wall.*, in Travancore; and *O. Heyneana*, *W. and A.*, in the Peninsula of India. *O. Wallichii*, *Planch.*, the Yo-da-ya of the Burmese, *O. Andamanica*, *Kurz*, has a hard reddish wood, similar to *O. squarrosa* and *O. Wallichii*.

OCHRE, *Red.*

Ch'ih-t'u, . . . CHIN. Red chalk, Bole, . . . ENG. Hawang-t'u, . . . " Pewdee, . . . GUJ., HIND. Yellow ochre, Reddle, ENG. Sonagaroo, . . . TEL.

An earthy mixture of alumina, silica, oxide of iron, and other substances, found in beds in various parts of India. Ochre occurs in great beds beneath the laterites of S. India. It is generally of a yellow or brown colour, but is sometimes red. It is employed as an ingredient in painters' colours, in the polishing of metals and stones, and for other purposes. Ochre sometimes contains a little calcareous matter and magnesia. The oxide of iron may occur in so large a proportion that the ochre becomes an ore of that metal. In England, ochre is found in beds some feet thick, generally above the oolite, and covered by sandstone and quartzose sands more or less ferruginous, and accompanied by grey plastic clays of a yellowish or reddish colour. All these substances enter into the composition of the ochres. The ochrey earths are ground and elutriated for use; the yellow ochres may be changed into red or reddish-brown by calcination, whereby the iron is raised to a higher degree of oxidation. Ochres are used in China as a dusting powder to burn, scalds, itchy and herpetic eruptions.—*Sm.*

OCHROCARPUS, a genus of plants of the order Guttiferæ and tribe Garcineæ. *O. longifolia*, *Benth.*, is a large tree of the W. Ghats, whose dried flowers are used for dyeing silk. *O. nervosus*, *Kurz*, is an evergreen tree of the Arakan Yomah, and *O. Siamensis*, *T. And.*, of

Prome and Martaban, is also an evergreen tree.—*Gamble.*

OCHROSIA, a genus of plants of the order Apocynæ. *O. salubris*, *Bl.*, of the Andamans, and *O. Borbonica*, *Gm.*, of Ceylon, both small trees.

OCHTERLONY, SIR DAVID, a general officer of the Bengal army. He was the son of an American gentleman, who remained a royalist, and lost his estates in that country. Sir David came to India, and distinguished himself in peace and war. For eight days he defended Dehli against Jeswunt Rao Holkar, repulsing repeated assaults, though with open breaches, till on the night of the 15th October 1804, on the approach of Lord Lake, Holkar withdrew. From that time the Moghul emperor of Dehli became a stipendiary of the British. The Nepal war, which ended on the 12th March 1816, was successfully conducted by him, but there had fallen General Gillespie, who relieved Vellore when it was seized by rebels in 1808, and who had distinguished himself in Java in August and September 1811. After the Nepal war, several tracts in the mountain valleys of the Himalayas were ceded to the Indian Government. He was long employed in conducting negotiations with Ranjit Singh. He died at Meerut, 15th July 1825, aged 68 years. The monument raised at Calcutta to his memory is a column 160 feet high, with a Turkish capital and an Egyptian base; it cost £3500. He was Political Agent at Dehli. He found his name placed by his own moonshi, without his knowledge, as a pensioner to the amount of £1200 a year on the civil list of the poor old king of Dehli.—*Tod's Travels*, p. 36.

OCIMUM, a genus of plants of the order Lamiacæ, *Lindl.*, Labiatæ, *Jussieu*, of which there are about 60 species. Many of them, furnishing useful products, are known to occur in the warm parts of the world.

Ocimum adscendens, *Willde.*

O. cristatum, *Kon.* | *Plectranthus Indicus*, *Spr.*
O. indicum, *Roth.* | *Ban-tulsi*, . . . BENG.

Grows in the Peninsula of India and in Bengal. It has small, pale, rose-coloured, scentless flowers.

Ocimum basilicum, *Linn.*, common basil, has many varieties, differing in their size, in the form and colour of their leaves, and in minor particulars; in their qualities they are nearly alike; useful for condiments and perfumery. The varieties, α , β , γ , δ , are—

Var. (α) O. pilosum, *Benth.*

<i>O. basilicum</i> , <i>Burm.</i>	| <i>O. hispidulum</i> , <i>Schum.</i>
<i>O. minimum</i> , <i>Burm. not L.</i>	| <i>O. ciliatum</i> , <i>Horn.</i>
<i>O. hispidum</i> , <i>Lam.</i>	| <i>Basilicum Indicum</i> , <i>Rum.</i>
<i>Habak</i> , . . . ARAB.	| <i>Rihan</i> , . . . PERS.
<i>Babui-tulsi</i> , . . . HIND.	| <i>Naz-bu</i> , . . . "

It grows throughout India. It has small white flowers; the whole plant is aromatic and fragrant; the seeds steeped in water swell into a pleasant jelly, which is demulcent and nourishing, and is used by the natives in cases of catarrh, diarrhoea, and chronic dysentery. The green leaves have a delicious smell, exactly like verbena. The dried plant prevents bugs approaching beds, etc. The seeds are used by women to relieve after-pains.

Var. (β) O. anisatum, *Benth.*, sweet basil.

O. basilicum, *L. not Burm.* | *Basilicum citratum*, *Rum.*

OCIMUM.

A native of Persia, with small white flowers, aromatic and fragrant.—*Roxb.* iii. p. 17.

Var. (1) *O. glabratum*, *Benth.*

O. caryophyllatum, *Roxb.* | *O. lanceolatum*, *Schum.*
O. integerrimum, *Willde.* | Gulal-tulsi, . . . BENG.

A native of Guinea, Bengal, and Penang. It has smallish white flowers. The whole plant is very aromatic and fragrant.—*Roxb.* iii. p. 15.

Var. (2) *O. thyrsoiflorum*, *L., Roxb., Jacq.*

A plant of the Peninsula of India, with small, pale pink flowers, the whole plant very aromatic and fragrant. There are other vernacular synonyms of the above varieties, but it is not possible to discriminate the varieties indicated by them. The varieties differ considerably in their scent.

Ocimum canum, *Sims., Linn.?*

<i>O. album</i> , <i>Roxb.</i>	<i>O. Americanum</i> , <i>Linn.</i>
<i>O. stamineum</i> , <i>B., L.</i>	<i>O. inoescens</i> , <i>Mart.</i>
Badruj abiaz, . . . ARAB.	Viswa tulasi, . . . SANSK.
Safaid-tulsi, . . . DUKH.	Cunjam koray, . . . TAM.
Hoary basil, . . . ENG.	Kukka tulasi, . . . TEL.
Wild mint, . . . ,	

A native of the Brazils, Madagascar, E. Indies, and China; in India, a shrub about a foot high, chiefly grown in native gardens. Flowers white; leaves have a most pleasant aromatic taste and smell. The juice is given to children in colds to the extent of a teaspoonful twice daily. The dried leaves are used as a substitute for tea.

Ocimum gratissimum, *Linn.*

O. petiolare, *Lam., Rheede.* | *O. Zeylanicum*, *Burm.*
Ban-jari, . . . HIND. | Ram tulsi, . . . HIND.

This is cultivated near temples. It has white or pale yellow flowers, with a very strong fragrance.—*Roxb.* iii. p. 17; *Gen. Med. Top.*

Ocimum micranthum, *Willde.*

O. frutescens, *Sieb.* | *O. montanum*, *Hook.*
O. Americanum, *Auctorius.* | *O. pubescens*, *Mill.*

A fragrant plant of N. America.—*Voigt.*

Ocimum sanctum, *Linn.* Holy basil.

<i>O. hirsutum</i> , <i>Benth.</i>	<i>Lumnitzera tenuiflora</i> , <i>Spr.</i>
<i>O. tomentosum</i> , <i>Lam.</i>	<i>Basilicum agreste</i> , <i>Rumph.</i>
<i>O. tenuiflorum</i> , <i>Lam.</i>	<i>Plectranthus monachorum</i> , <i>Spr.</i>
<i>O. frutescens</i> , <i>Burm.</i>	
Alsi-badruj, . . . ARAB.	Nalla tirtava, MALEAL.,
Krishna-tulsi, . . . BENG.	TEL.
Kural, . . . ,	Parnasa, Sorasa, SANSK.
Pein-zang-zee, . . . BURM.	Arjaka,
Tulsi, . . . DUKH.	Kuli-mitan, . . . TAM., TEL.
Purple-stalked basil, ENG.	Tulsi, . . . ,
Kala-tulsi, . . . HIND.	Nalla gaggeru, . . . TEL.

Whole plant slightly aromatic, prescribed by the Hindus in decoction in the bowel complaints of teething children. This tulsi plant is sacred to Vishnu, held in the highest veneration by all his followers; is grown in the courtyard or parterre of almost every Vaishnava house, however small, and it is worshipped morning and evening. Its root is made into beads, and worn round the necks and arms of the Vaishnava Brahmins. The root of the plant is given in decoction in fevers, half a teacupful twice daily. In the Dekhan it is grown in almost every native garden, and is used for various purposes by Europeans, for flavouring sauces, wine, or vinegar. It is seen about the temples of Hindus and burial places, where it

Its fragrant blossoms o'er their graves.'

The Brahmins use it in their funeral ceremonies. The Malays also strew it over the graves of their dead. In Pegu, it is steeped in water, and drunk as a sherbet. The N. Australian variety smells

OCTOPODIDÆ.

like anise; that of E. Australia is like cloves. The seeds are mucilaginous, and are used in gonorrhœa.

Ocimum villosum, *Roxb.* Woolly basil.

Pen-zeing-blung, BURM. | Arjakarm, . . . TEL.
Safaid-tulsi, . . . HIND. | Tella gaggera chettu,

Cultivated in gardens and near temples. An aromatic herb; leaves used for seasonings. In all courts of justice, the Hindus are sworn by these leaves, which are placed on the palm of the hand by a Brahman, who repeats the prescribed oath, and at the termination they are masticated and swallowed. A good number of the species of this genus are used in cookery.—*Roxb.*; *Gen. Med. Top.*; *Jaffrey*; *O'Sh.*; *Ains.*; *Riddell*; *Mason*; *Cat. M. Ex.*, 1857; *Powell.*

OCODOMA, a genus of ants extremely numerous over all India, and comprising several species very nearly alike. Almost all the species have two kinds of neuters, one of them of very large size compared with the ordinary workers, and which are usually called warriors. The chief distinction of *Ocodoma* from *Atta* consists in the former having some small spines on the thorax.

Dr. Jerdon mentions *O. affinis*, *diffusa*, *diversa*, *Malabarica*, *minor*, *providens*, and *quadriflorosa*. *O. providens*, *Sykes*, live under ground, making, for their size, a large series of excavations. Their common food—animal matter, dead insects, etc.—they take readily, but they also carry off large quantities of seeds, especially small grass seeds, and more especially cabbage, celery, radish, carrot, and tomato seeds, and are particularly partial to the light lettuce seeds, and in some gardens, unless the pots in which they are sown be suspended or otherwise protected, the whole of the seeds sown will be removed in one night. Packets of seeds (especially lettuce) in a room will be completely emptied before aware that the ants have discovered them. They bring the seeds outside their holes, at the close of the rainy season, but in some cases merely the husks, quite in heaps. Their galleries and subterranean passages are often very extensive, and it is no easy matter to dig down to their nest to see what becomes of the seeds.—*Jerdon.*

OCOTEA GLAUSCEUS. *Nees.*

Laurus glaucescens, *Roxb.* | *L. sylvestris*, *Bka., Herb.*

A tree of Sylhet and N. Circars, one of the Lauraceæ. Its timber is used by the people for many useful purposes.—*Roxb.* ii. p. 307.

OCOTEA LANCEOLARIA. *Nees.*

O. lanceolata, *Nees.* | *Laurus lanceolaria*, *Roxb.*

A tree of Nepal and the Khassya mountains; timber employed for many useful purposes. *O. mollis*, *Wall.*, is a shrub of Burma. Species of *Ocotea* extend from Sylhet to Dehra Doon, and ascend to 7000 feet.

OCTOPODIDÆ, a family of Cephalopodous mollusca, which may be thus shown:—

CLASS I.—Cephalopoda, cephalopoda.

ORDER I.—Dibranchiata.

SECTION A. Octopoda.

Fam. 1. Argonautidae.

Genus, *Argonauta*, argonaut or paper sailor, recent, 4 sp.; fossil, 1 sp.; syn. *Ocythoe nautilus*.

Fam. 2. Octopodidae.

Genera, *Octopus*, recent, 46 sp., syn. *Cistopus*.

Sub-genus, *Tremoctopus*, recent, 2 sp.

Pinnoctopus, finned octopus, recent, 1 sp.

P. oordiformis.

Eledone, recent, 2 sp.

Cirrotheuthis, recent, 1 sp. *O. Müllerii*.

Philonexis, recent, 6 sp.

Professor Owen divides the octopods into two groups or families, the Testacea and the Nuda. The Testacea consist of the genera Argonauta and Bellerophon. Of Argonauta, several species occur in the seas on the south and east of Asia, viz. *A. argo*, cornu, cymbium, gondola, hians, thaustrium, tuberculata, and vitrea. *A. argo* has been from the earliest periods an object of interest to zoologists, in consequence of the accounts of its sailor-like habits handed down to us from Aristotle, Pliny, Ælian, Oppian, and others; and in consequence of the difference of opinion entertained with regard to the inhabitant of the shell by naturalists. In 1836, Madame Jeannette Power laid before the Academy at Catania her Osservazione Fisiche sopra il Polpo de l'Argonauta Argo, in which, after a long and careful course of inquiry, she ascertained that it constructs its own shell. The argonaut is furnished with eight arms, having on each two rows of suckers; the first two arms are more robust than the others, and should be so because they serve as masts to support the sails, which, spread out, act before the wind as such. At the base they have on the inferior sides the double row of suckers, like the other six; but from the inferior row, at about an inch from the base in adults, a rather furrowed membrane begins to develop itself, which extends as far as the tip of the arm, and, holding it bent, it can no longer execute the office of a rowing arm, but is employed by the animal as a sail. These sails are so large that, when turned backwards and pressed against the shell, they can entirely cover and protect it. The true office of these sails is that of keeping themselves applied to the shell at all times, in reserve for the moment when the animal, coming to the surface of the water, removes them, and, spreading them, raises them as sails. In fact, the series of suckers of the sail-arms when the membrane of the sails is wrapped about the shell, is placed exactly over the keel of it, in such a manner that each sucker corresponds to each point in which the ribs of the shell terminate, until they reach the two margins of the spiral. Captain Philip Parker King, R.N., during his passage from Santos to St. Catherine's, in lat. 28° S., caught a dolphin (Coryphæna), the maw of which was found filled with shells of Argonauta tuberculosa (Arufa of Owen), and all containing the Octopus ocythoe that has been always found as its inhabitant. Most of the specimens were crushed by the narrow passage into the stomach, but the smaller ones were quite perfect, and to some of them was attached a nidus of eggs, which was deposited between the animal and the spire. The shells varied in size from two-thirds of an inch to two and a half inches in length; each contained an octopus, the bulk and shape of which were so completely adapted to that of the shell, that it seemed as if the shell increased with the animal's growth. In no specimen did there appear to be any connection between the animal and the shell. Several species are already known as inhabitants of the seas of warm latitudes, both littoral and pelagic.

Eleodone, Aristotle, Leach. Arms provided with a single series of sessile acetabula.

E. ventricosa, Octopus ventricosus, Grant. Body short, round; the eight arms connected at their base by a membrane.

Octopus, Lam., Πελιδών, Leach. Its arms are

provided with a double alternate series of sessile acetabula.

O. vulgaris, Sepia octopodia, Linn.; Sepia octopus, Gmel. Body short and ovoid, the eight arms connected at their base by a wide membrane. The octopus is eaten by the Chinese and Japanese.

Madame Power, writing on the habits of the poulpe or cuttle, mentions that into one of her aquaria she had put a living Pinna nobilis adhering to a fragment of rock; this aquarium also contained an Octopus vulgaris and some living testaceous mollusca. One day she saw that the poulpe was holding a fragment of rock in one of its arms, and watching the pinna, which was opening its valves. As soon as they were perfectly open, the poulpe placed the stone between the valves, preventing the pinna from closing them again, when the octopus set about devouring the mollusc. The next day she saw the poulpe crush some Tellinæ, then search about amongst other shells, and finally stretch itself close to a Triton nodiferum. The triton extended half the body from its shell, no doubt to seek its food, when the poulpe sprang upon it, and surrounded it with his arms; the mollusc retired precipitately into its shell, and in closing this, with its operculum pinched the point of one of the arms of the poulpe, which, by struggling, at last left the tip of its arm in the shell of the triton. The voracity of the poulpe was such, that, notwithstanding the abundance of nourishment with which she furnished it, she was compelled to remove it from the aquarium, or it would have devoured all the mollusca. So great is its voracity, that it even attacks man, tears away his flesh, and eats it. In the port of Messina they occur in great numbers, and of large size. One Octopus Chinensis, measured by Adams, was 6 feet from tip to tip of the arms.—*Adventure and Beagle Voyages; Madame Jeannette Power, Mag. Nat. Hist.; Eng. Cyc.; Woodward's Shells; Indian Field; A. Adams' Tr. in Japan.*

ODDAIKKUTTAR was one of the Tamil poets at the Chola court, who flourished with Kambar in the 11th century. He was noted for his composition on War Chariots, called Parani. His Kalingattu Parani celebrated the conquest of the Kalinga or Telugu country by Kulotunka Chola. The seventh book of the Tamil Ramayana, Uttara Kandam, was composed by this author.

ODEYA, CARN., in the plural Wodeyar, a lord, a chief, a ruler.—W.

ODHA, MAHR. As much grain as can be grasped in both hands; the Scotch goupian.

ODHIYA, a caste of ironsmelters and ironsmiths in Hindustan.

ODIN has been supposed by some to have been the Buddha Sakya Sinha, by others to have been a follower of that reformer. In Scandinavian mythology, he was the chief of the gods; like Zeus, he was the ether. If the same with Sakya Sinha or one of his pupils, there have never in the world been two other religions so diametrically opposed to one another, nor two persons so different as the gentle Sakya Muni, who left a kingdom to alleviate the sufferings of mankind, and Odin, the terrible and severe father of slaughter. Nevertheless the Yggdrasil Ash Tree, in the Norse mythology, with one of its roots over the Well of Knowledge, and with Nidhog

gnawing its stem, suggests obvious analogies, not only with the Tree of Knowledge and Serpent of Eden, but with the Bo Tree of Buddha.—*Darwinism in Morals*, p. 188.

ODINA WODIER. *Rozb.*

Dhantika, Sulambra, BEAS.	Jiyal, Jeevula,	SANSK.
Hnan bai, Na-bhay, BURM.	Hik-gass, Hig-gass, SINGH.	
Shimtee Poonil,	Pichka,	SUTLEJ.
Kambal, Batrin,	Lidra, Dila,	
Kunlu,	Ani carra, Ooday,	TAM.
Kiamil,	Goompana,	TEL.
Mageer,	Gampina,	
		MAHR.

This very large tree grows in the warmer parts of the island of Ceylon, up to an elevation of 1500 feet. It is a native of mountainous districts in the Peninsula of India; grows in Coimbatore, in Bengal, Murree, and Hazara, in the coast jungles of the Bombay Presidency. In the Madras Presidency it is grown from cuttings and is planted in avenues, but it yields no shade in the hot weather, being without leaves till June. The tree is rather common on the hills of British Burma, and a valuable timber, much used at Shoa-gween in the manufacture of oil-presses and rice-pounders; the inner heart-wood is red, and is used for sheaths of swords, spear handles, oil presses, door frames, and rice-pounders. A cubic foot weighs 65 lbs. The wood is very difficult to season, requiring to be kept, even in planks, two or three years; but once well seasoned, it is a close-grained, beautiful wood, well adapted for cabinet-making purposes, the central reddish portions in particular. A considerable quantity of gum exudes from the trunk, called Kania or Kuni gond, also gum-jingna, and it resembles the true gum-arabic both in appearance and properties, and is often largely mixed up with the East India gum-arabic of commerce, which contains gums collected indiscriminately from several species of *Acacia*, and from *Odina wodier* and *Feronia elephantum*. The gum is used in cloth-printing, also by weavers for stiffening their thread, and is given in asthma, and as a cordial to women. The tree is lopped for fodder. It ascends the slopes of the mountains in the Babar forests of Kamaon, and attains considerable size. In the Siwalik region of the Panjab, up to near the Indus, and near the Salt Range, to a height of 3500 to 4000 feet, the outer wood is liable to be attacked with worms.—*Cal. Cat. Ex.*, 1862; *Thw.*; *Rozb.*; *Voigt*; *Mason*; *Brandis*; *Stewart*.

ODOARDO BARBOSA, a gentleman of Lisbon, who in his youth travelled in the east, and he appears to have visited Malacca before it was taken by the Portuguese in 1511. He wrote a book in 1516. In 1519 he joined Magellan, and was treacherously murdered in 1521 by the natives of Zebu, one of the Philippines, four days after the great navigator had suffered a like fate.—*Bikmore*, p. 100.

ODORICO DI PORDENONE, Minorite friar (born 1281, died 1331), a Beatus of the Roman Catholic Church, travelled in the east and in India between 1316 and 1330. He proceeded by way of Constantinople and Trebizond, Arziron (Erzeroum), Tauria, Soldania (Sultanieh), and the Sea of Bacuc (i.e. of Baku, the Caspian), Cassan (Kashan), Iest (Yezd), and the Sea of Sand, the ruins of Comerum (Persopolis), and the kingdom of Chaldaea (Baghdad), to Ormes (Ormuz), whence he took ship to Tanna in Salsette, near Bombay. Here, or at Surat, where

Friar Jordanus had deposited them, he gathered the bones of the four missionaries who had suffered martyrdom there in 1321, and took ship again to Polumbum (or Columbum, Quilon). He notices the immense quantity of pepper cultivated in Minibar (Malabar), on which coast he also visited the towns of Flandrina (Pandarani) and Cyngilin (Cynkali, Shinkala, Gingala, Jangli, Cranganore). He then went on to Mobar (the Coromandel coast), 'where lieth the body of St. Thomas;' and thence in fifty days sailed to Lamori (Lambri) and to the kingdom of Sumoltra (Sumatra). From Sumatra he went on to Java, and to another island called Thalamasyn or Panten, which has been thought to be Borneo, and thence to Zampa (Cochin-China). He next notices the island of Nicoveran (Nicobars) and of Sillan (Ceylon), whence his narrative carries us at once to Upper India (China) and the province of Manzi (Southern China), and the cities of Censcalan (Canton), Zayton (Chin-chu), Fuzo (Fu-chu), Canasay (Hang-chu-fu), Chilenfu (Nankin), and Cambalech (Pekin), and Sandu (Xanadu, Shang-tu), the summer residence of the Great Khan. He describes 'the lands of Prester John,' and 'the realm of Thibet,' and the Grand Lama, as the pope of that country. He also gives an account of the 'Old Man of the Mountain,' and of his dealings with the 'Devils of Tartary.' He died at Padua A.D. 1331. Lamori has been supposed to be the Arabic Al-Rami. He is known as Odoricus. His account was delivered orally to the person by whom it was written down, but is extremely meagre and unsatisfactory.—*Marsden's Sumatra*, p. 7; *Sir G. Birdwood's Records*.

CECOPHYLLA SMARAGDINA, a common green ant of the Malay Archipelago, which lives in large nests formed by gluing together the edges of leaves.

OESAR or Oesaran. JAV. A whirl in the hairs of the head, indicating a good sign or mark.

CESTRIDEA, a family of dipterous insects, flies, the larvæ of which live in the bodies of the ox, sheep, horse, dog; also under the skin and in the nostrils of man. They are of the genera *Hypoderma*, *Cestrus*, or *Cephalæmia*.

Cestrus equi occurs in the south of Europe and in Persia. It is a dipterous insect. Its eggs are deposited on the hair of the horse, and licked into the stomach, and when complete the insects pass through the canal.

The *Cestrus ovis* or *Cephalæmia ovis* of Europe and the East Indies arises from the larvæ of a fly which penetrate the sinuses of the head, and there become fully developed, setting up a copious discharge from the nostrils, and disease of the mucous membrane lining the air passages, and ultimately influencing the brain through the thin cribriform plate of the ethmoid bone, and through which the olfactory nerve passes out. The ovum of the fly is deposited on the grass, and becomes attached to the nostrils of the sheep while grazing. The parasites annually cause many deaths among flocks. This serious disease affects the sheep most in the rainy season, when grass is abundant. The first symptom is a distressing discharge from the nose, the sheep breathing with great difficulty. If the grubs do not drop, the sheep die.—*Figuer*. See *Insects*.

OGUNA PANORA, says Colonel Tod, is the sole spot in India which enjoys a state of natural

freedom. Attached to no state, having no foreign communications, living under its own patriarchal head, its chief, with the title of rana, whom one thousand hamlets scattered over the forest-crowned valleys obey, can, if requisite, appear at the head of five thousand bows. He is a Bhunia Bhil of mixed blood, from the Solanki Rajput, on the old stock of pure (oojla) Bhil of Mewar. Besides making the tika of blood from an incision in the thumb, the Oguna chief takes the prince by the arm and seats him on the throne, while the Oondree Bhil holds the salver of spices and sacred grains of rice used in making the tika. Firearms (Travels, p. 34) are only used by the chiefs and headmen, the national weapon being the kumpta, or bamboo bow, having the bow-string (chulla) from a thin slip of its elastic bark. Each quiver contains sixty barbed arrows a yard long. Although they claim descent from every race of Rajput, and prefix the tribe, as Chohan Bhil, Gehlot Bhil, Pramari Bhil, etc. etc., their origin is best evinced in the gods they worship and their prejudices as to food. The Oojla Bhil, or pure Bhil, will eat of nothing white in colour, as a white sheep or goat; and their grand abjuration is, 'By the white ram!' Their ancient position is well illustrated by the circumstance of their claiming the right to instal Rajput princes. When Bappa fled, two Bhils were the companions of his flight, one of Oondree, in the valley of the present capital, the other of Solanki descent, from Oguna Panora, in the western wilds. Their names, Baleo and Dewa, have been handed down with that of Bappa, and the former had the honour of drawing the tika of sovereignty with his own blood on the forehead of the prince, on the occasion of his taking the crown from the Mori. The descendants of Baleo of Oguna and the Oondree Bhil still claim the privilege of performing the tika on the inauguration of the descendants of Bappa. In the early part of the 19th century (Tr. p. 84), taking a section of about sixty miles in the Alpine Aravalli, from the ascent at the capital of Oodeypur (Udaipur), passing through Oguna, Panurpa, and Mirpur, to the western descent near Sirahi, the land was inhabited by communities of the aboriginal races, living in a state of primeval and almost savage independence, owning no paramount power, paying no tribute, but with all the simplicity of republics, their leaders, with the title of rawut, being hereditary. The rawut of the Oguna commune could assemble five thousand bows, and several others could, on occasions, muster considerable numbers. Their habitations are dispersed through the valleys in small rude hamlets near their pastures or places of defence. In 1882 and 1883 the Bhils of Mewar continued semi-independent.—*Tod, Travels.*

OGYRIS, the modern Ormuz.

OHIND. The continual discovery of Indo-Scythian coins proves that this city was in existence at the beginning of the Christian era, which may perhaps induce us to put some faith in the tradition mentioned by Abul Fada, that Wehand or Ohind was one of the cities founded by Alexander. General Court, Sir Alexander Burnes, and Mr. Loewenthal call this place Hund.

OH ME! The Chinese Buddhist invocation is, Oh me to Fo! Oh me to Fo!

OHUD, a hill about four miles north of Medina, where a battle took place between Mahomed with 1000 and the Korash with 3000 troops. Mahomed had the hill in his rear, with archers placed on its flanks to annoy the enemy's horse, but the archers quitted their position to plunder, and Mahomed was wounded and defeated.

OILS.

Kyet-hsoo, . . .	BURM.	Minak, . . .	MALAY.
Olle, . . .	DAN., DUT.	Roghun, . . .	PERS.
Huile, . . .	FR.	Azeite, Oleo, . . .	POB.
Oel, . . .	GER.	Masslo, . . .	RUS.
Elaiou, Ladion, . . .	GR.	Aceite, . . .	SP.
Tel, . . .	HIND.	Olja, . . .	SW.
Olio, . . .	IT.	Yennai, . . .	TAM.
Langa, . . .	JAV.	Nuna, . . .	TEL.
Oleum, . . .	LAT.	Yagh, . . .	TURK.

Oils are found in the animal, vegetable, and mineral kingdoms. Their value as articles of commerce, and their numerous uses in candle and soap making, wool-dressing, food, and medicine, as well as lubricating agents, are well known. Great Britain imports annually to the value of about £3,500,000, the palm and cocoanut oils being to the value of 1½ millions sterling. The oils which form the chief exports from different parts of India to Britain, France, the Mauritius, etc., are cocoanut, gingelly, ground nut, mustard, rape, sandal-wood, grass oil, and fish oil. The value of the exports of oil from all India was in—

1874-75, . . .	Rs. 32,22,852	1880-81, . . .	Rs. 35,35,166
1875-76, . . .	„ 40,42,073	1881-82, . . .	„ 35,40,439
1876-77, . . .	„ 35,26,002	1882-83, . . .	„ 28,33,609

Linseed and rape are consigned mainly to the United Kingdom, while France takes almost the entire quantity of til or gingelly. This branch of Indian commerce in 1852-53 was only of Rs. 9,60,390.

Oils are generally divided into two primary groups, 'fixed' and 'volatile,' the former class being again subdivided into drying, greasy, and solid oils. Above one hundred fixed oils are known in India and Burma; 105 fixed vegetable oils, including drying, greasy, and solid oils; 10 wood oils, 1 mineral oil, and 4 animal oils. Cocoanut, castor, ground nut, gingelly and its variety, with rape, mustard, and linseed oils, form considerable articles of export trade, the first three being exported in the shape of oil, the last two as oil-seed, and gingelly both as an oil and oil-seed. The prices of these products vary considerably in different parts of British India; and lamp, ramtil, kurunj, pinnacottay, illoopoo, piney or doopada, margosa or neem, physic nut, brumadundoo, safflower, and poppy are consumed to a large extent. Poppy seed is being exported in yearly increasing quantities, largely to France; in 1882-83, 571,542 cwt., value Rs. 30,26,401.

Fixed oils are composed of carbon, hydrogen, and oxygen. Most of them are composed of two compounds, a liquid called olein and a solid called margarin, or another called stearin. According as the solid substances abound in oils, they are liquid or solid at the ordinary temperatures of the atmosphere. Fixed oil is found in the fat or adipose tissue of animals, and amongst plants, principally in their seeds. In some cases, as in the olive (olea), it is yielded by the fruit. The following table shows the relative proportions of

the three elements in 100 parts of each of the following oils:—

	Carbo.	Hydro.	Oxy.		Carbo.	Hydro.	Oxy.
Olive, .	77.21	13.36	9.43	Whale, .	76.13	12.40	11.50
Almond, .	77.40	11.48	10.82	Spermaceti, .	78.91	10.97	10.12
Linseed, .	76.01	11.35	12.62	Hog's lard, .	79.00	11.14	9.75
Nut, .	79.77	10.5	79.12	Suet, .	78.99	11.70	9.30
Castor, .	74.17	11.03	14.78	Butter, .	65.60	17.60	16.80

Oils are extensively used for candle and soap making, for burning in lamps, for diminishing friction in machinery of all kinds, in wool-dressing, in the manufacture of paints and varnishes, as articles of food, for medicinal purposes, etc. The time of burning of equal quantities of the following oils is found to be—

Oil of poppy, .	Hours, 14	Oil of Camelina sativa, Hrs., 94
" sunflower, "	13	" olives, " 9
" rape, . . "	11	" hemp seed, . . . " 8
" mustard, "	11½	" tallow, " 10½
" flax seed, "	10	

In the seeds of Southern Asia from which varieties of oil are extracted, the proportions of oil per cent. in weight are—

Almond kernels,	53	Linseed,	38
Ground nut,	52	Cocoanut kernels,	36
Sesamum,	51	Hemp seed,	32
Poppy seeds,	45	Cotton seeds,	24
Olive kernels,	44	Sunflower seeds,	22
Cacao whole seeds,	44		

Some families of plants especially abound in oil. Thus among the Cruciferae we have mustard, rape, and colza seed-oil, with other species cultivated in Europe, India, and Japan, several of which have been exported to Britain. Several of the family of Compositæ secrete oil in quantities large enough to render it desirable to cultivate them for this purpose alone, as some species of carthamus, or bastard saffron, also the Guizotia oleifera, gingelly oil, known in commerce by the name of huteyellow oil. Most of the Cucurbitaceæ also, as the melon, gourd, cucumber, and their numerous varieties, cultivated especially in India, contain a large proportion of oil, which is expressed in the East Indies as it formerly was in Europe. The Rosaceæ also store up a large proportion of oil in the kernels of their fruit, as in the almond, which is particularly valued; so also that of the apricot, the Briancon apricot, and other species of prunus. In the Himalaya, oil is expressed from the apricot kernel, and has been made of a fine quality. From among the Cupuliferæ also, nut oil is obtained from the hazel; beech-nut oil, from Fagus sylvatica; and walnut oil, from Juglans regia, one of the Juglandæ.

Volatile oils are numerous in the vegetable kingdom. They are so called on account of the ready manner in which they may be volatilized under the influence of heat. The facility with which they are diffused in the atmosphere renders them easy of detection, and it is to this class of substances that plants owe their peculiar odours. Many of them are employed in perfumery, others are used as stimulants in medicine, and some are poisonous. Many natural orders of plants are characterized by yielding volatile oils. Thus the Lamiaceæ, Myrtaceæ, and others, embrace species all of which contain volatile oil in their leaves. Many of the Umbelliferæ yield a volatile oil in their fruits. The petals are often the seat of these secretions, and especially those most prized, as the rose, the jasmine, the heliotrope, and many others. Many of the *essential* or volatile oils employed in medical practice are almost all powerful stimulants and carminatives. They are chiefly obtained

from species of amomum, amygdalus, anethum, andropogon, anthemis, carum, caryophyllus, dryobalanops, eugenia, fœniculum, illicium, juniperus, laurus, lavandula, melaleuca, mentha, moringa, myristica, ocimum, origanum, pimpinella, piper, rosmarinus, ruta, and sassafras.

The essential oils are obtained from various parts of the odoriferous plants, chiefly by distillation, but also by the chemical perfuming process of enflowering, as also by infusion. The best known in commerce are the oils of almonds, aniseed, bergamot, cajaputi, camomile, camphor, caraway, cassia, cinnamon, cloves, juniper, lavender, lemons, mint, nutmeg, orange, peppermint, pimento, rhodium, rosemary, roses (otto), savine, sassafras.

Scented oils, erroneously termed 'volatile,' obtained by the repeated distillation of fragrant herbs, etc., over into a receiver containing a portion of any fixed oil, to which the aroma is imparted, are prepared to some extent in the E. Indies, but chiefly for native use. Sandal-wood oil and the large varieties of atr, attar, or otto, etc., which form the principal part of native perfumery, are included in this class. The atrs of India contain the essential oils of the plants and substances sufficient to produce a perfume which is perfectly overpowering, even producing headache. The natives of British India have the phrase in their language, 'dimagh mu'attar hona,' to be stupefied, with fragrance. These atrs are principally made in Hindustan. Sandal-wood, jasmine, nutmegs, indeed, every odoriferous plant is by the perfumers (attars) made to yield an essential oil.

In the process of enflowering, layers of flowers, four inches thick and two inches square, are laid on the ground and covered over with equal layers of sesamum or any other oil-yielding seed, over which a second layer of flowers like the first is placed. The seed is wetted with water, and the whole mass covered with a sheet held down at the ends and sides by weights, and allowed to remain for eighteen hours in this form. It is now fit for the mill, unless the perfume is desired to be very strong, when the faded flowers are removed, and fresh ones put in their place. The seeds thus impregnated are ground in the usual way in the Kolhoo or mill, and the oil expressed has the scent of the flower. At Ghazipur, the jasmynes are chiefly employed; the oil is kept in leathern bottles or dubbers, and sold for about Rs. 2 a seer. The newest oils afford the finest perfumes. In Europe, a fixed oil, usually that of the ben or moringa nut, is employed for enflowering. Cotton is soaked in this and laid over layers of flowers, the oil being squeezed out so soon as impregnated with perfume.

Mineral oils are obtained in Turkish Arabia, Batku, N. Persia, Northern India, China, Burma. From the oil pits of Burma the Burmese Government used to obtain 93,000 tons annually, the oil on the spot fetching about a shilling per cwt. Chemically treated, it supplies half-a-dozen of products of the greatest beauty, several being oils, one a hard wax of snowy whiteness, and one a rich perfume. In several places in the Jhelum district along the Salt Range, at Kafir Kot, at Jabba in the Shahpur district, and in very small quantities at Shah-ka-Nurpur, in the Rawal Pindi district, a petroleum exudes out of the rocky soil, but efforts to utilize it in a commercial point of

view failed, chiefly owing to the enormous cost of carriage, and to the difficulty of retaining the substance itself with any other vessels than those made of tin or glass. Price and Co., of London, reported favourably upon it, and asked for some tons of it for further experiments. Their application could not be complied with to the extent of the requisition, not more than eight maunds a day being obtainable, and the yield of oil being greater in the hot than in the cold weather. Wood smeared with mineral oil is effectually preserved from the ravages of white ants. The oil burns with a bright flame, but the smoke is insufferable. The natives call it Gandak-ka-tel, and use it only for burning in their lamps. The Jabba spring is the most extensive.

Animal oils are in frequent use amongst the people of India as medicinal substances, for external application, such as that from the pea-fowls' fat, from the neats' foot, the crocodile, and the iguana; also the oils from the sharks, the rays, and the cod-fish, and spermaceti and its oil.

Fish oil is prepared in Malabar and the western coast of the Peninsula of India, whence it is exported to England in large quantities; the demand is also yearly increasing. Fish-liver oil is prepared on the western coast and at Madras. The liver of the white shark is that generally used. The best fish-liver oil is prepared early in January, when the livers are plump, firm, large, white, and full of oil. The livers are sometimes found diseased, and those specifically lighter than water should be rejected. Good livers should cut smooth, and not tear; when cut, none of the substance should flow out in a half-liquid state. The quantity of oil produced by livers depends much upon the time of the year. In the beginning of January 1000 livers were found by experiment to yield 37 imperial gallons, and at the end of February an equal number only gave 23 gallons of oil. In the beginning of January 1000 livers of average size weighed 900 lbs., whilst in the last day of March the same number weighed only 575 lbs. The oil at these different seasons was equally pale, and the livers equally white, although much smaller and more flabby in the latter season. To prepare the oil, wash the liver very carefully, first removing the gall-bladders which adhere to them, and infuse them in rain or other water free from salt. Place them over the fire, and never allow the heat to exceed 120° or 130°. On this head especial care must be taken; a higher degree of heat, although yielding a larger product, communicates a rank, fishy taste and smell, and heightens the colour of the oil, thereby rendering it disgusting to the patient.

The better known vegetable oils of Southern and Eastern Asia are from the following plants:—

<i>Acorus calamus.</i>	<i>B. longifolia.</i>
<i>Adenanthra pavonina.</i>	<i>Bauhinia tomentosa.</i>
<i>Aleurites triloba.</i>	<i>Bergera Konigii.</i>
<i>Amygdalus communis.</i>	<i>Brassica Chinensis.</i>
<i>Anacardium occidentale.</i>	<i>B. eruca.</i>
<i>Andropogon Martini.</i>	<i>B. juncea.</i>
<i>A. muricatum.</i>	<i>B. napus.</i>
<i>Anethum sowa.</i>	<i>Buchananina latifolia.</i>
<i>Anisochilos carnosum, W.</i>	<i>Butea frondosa.</i>
<i>Arachis hypogea.</i>	<i>Calophyllum inophyllum.</i>
<i>Argemone Mexicana.</i>	<i>Canarium commune.</i>
<i>Asadirachta Indica.</i>	<i>Cannabis sativa.</i>
<i>Balanites Egyptiaca.</i>	<i>Carthamus oxyacantha.</i>
<i>Bassia butyracea.</i>	<i>C. tinctorius.</i>
<i>B. latifolia.</i>	<i>Caryophyllus aromaticus.</i>

<i>Cedrus deodara.</i>	<i>Melia azedarach.</i>
<i>Celastrus paniculata.</i>	<i>Mentha piperita.</i>
<i>Cinnamomum, species.</i>	<i>Mimusops elengi.</i>
<i>C. Zeylanicum.</i>	<i>Moringa pterygosperma.</i>
<i>Citrus aurantium.</i>	<i>Myristica moschata.</i>
<i>C. bergamia.</i>	<i>Nicotiana tabacum.</i>
<i>C. decumana.</i>	<i>Nigella sativa.</i>
<i>C. limonium.</i>	<i>Ocimum, species.</i>
<i>C. medica.</i>	<i>Olea Europea.</i>
<i>Cocos nucifera.</i>	<i>Pandanus odoratissimus.</i>
<i>Coriandrum sativum.</i>	<i>Papaver somniferum.</i>
<i>Corylus colurna.</i>	<i>Pimpinella anisum.</i>
<i>Croton tiglium.</i>	<i>Pinus Gerardiana.</i>
<i>Cucumis melo.</i>	<i>Piper nigrum.</i>
<i>C. sativus.</i>	<i>Pogostemon patchouli.</i>
<i>Ocucurbita maxima.</i>	<i>Pongamia glabra.</i>
<i>Cuminum cyminum.</i>	<i>Prinsepia utilis.</i>
<i>Cyperus, species.</i>	<i>Prunus Armeniaca.</i>
<i>Datura, species.</i>	<i>Ricinus communis.</i>
<i>Didymia gymnosperma.</i>	<i>Rosa, species.</i>
<i>Dipterocarpus, several sp.</i>	<i>Salvadora Persica.</i>
<i>Dolichos biflorus.</i>	<i>Santalum album.</i>
<i>Dryobalanops camphora.</i>	<i>Sapindus emarginatus.</i>
<i>Elettaria cardamomum.</i>	<i>Sarcostigma Kleinii.</i>
<i>Embryopteris glutinifera.</i>	<i>Sassafras officinarum.</i>
<i>Erysimum perfoliatum.</i>	<i>Semecarpus anacardium.</i>
<i>Euphorbia draunculoides.</i>	<i>Sesamum Indicum.</i>
<i>Fœniculum panmori.</i>	<i>Sinapis, alba, Chinensis,</i>
<i>Garcinia pictoria.</i>	<i>glauca, nigra, toria.</i>
<i>G. purpurea.</i>	<i>Soja hispida.</i>
<i>Gossypium, species.</i>	<i>Sterculia foetida.</i>
<i>Guilandina bonduc.</i>	<i>Stillingia sebifera.</i>
<i>Guizotia oleifera.</i>	<i>Strychnos nux vomica.</i>
<i>Helianthus annuus.</i>	<i>Suchaw, of China.</i>
<i>Hydnocarpus inebrians.</i>	<i>Symplocos cratægoides.</i>
<i>Illicium anisatum.</i>	<i>Terminalia catappa.</i>
<i>Impatiens tingens, and sp.</i>	<i>Theobroma cacao.</i>
<i>Jasminum, species.</i>	<i>Thespesia populnea.</i>
<i>Jatropha ouroasa.</i>	<i>Trichilia spinosa.</i>
<i>Juglans regia.</i>	<i>Trigonella fœnum-græcum.</i>
<i>Kin, of China.</i>	<i>Vateria Indica.</i>
<i>Lepidium sativum.</i>	<i>Vatica robusta.</i>
<i>Linum usitatissimum.</i>	<i>Vernonia antelmintica.</i>
<i>Litsea, species.</i>	<i>Vitex negundo.</i>
<i>Melaenca cajaputi.</i>	<i>Xylocarpus granatum.</i>

A. Chinese Oils.

Almonds oil, Hang-jin-yu, manufactured in Persia, N. India, and China.

Anise (star) oil, 'Ah-koh-yu, is of a pale colour, with a warm or sweetish taste. It is made by distilling the fruit in small retorts, a pikul producing about seven catties of oil.

Apricot seed oil, Hang-jin-yu, prepared in the north of China from apricot kernels.

Bean oil, Tau-yu, in the south of China, is prepared in large quantities from the Soja hispida, and is used in food.

Benzoin oil, Ngan-sih-yu, is supposed to be the liquid storax or rose maloes (rasa-mala).

Cabbage or colza oil, Ta'ai-yu, is expressed from the seeds of the Brassica Sinensis, all through the valleys of the Yang-tze and the Han. It is used in cookery, as a hair oil, a lamp oil, and as a purgative.

Camellia, from the Camellia oleifera, Ch'a-yu, is a thin yellow-coloured oil, used in lamps. It is made in the hilly district of Hunan and Kiang-si, where the camellia grows in abundance. The Chinese call the camellia by the same name as the tea plant, hence this oil is often called tea oil.

Camphor oil, Nau-yu, is obtained from Formosa, where it exudes from vats in which camphor is stored; it is oily or uncrystallizable camphor; is a strong-smelling liquid of a yellow colour; it is scarcely saleable.

Camphor oil, from the Dryobalanops camphora of the W. coast of Sumatra, where the oil drops from the split timber of the trees felled to procure the Barus camphor, and is there sold at the rate of a large quart bottleful for a Dutch guilder; it is a useful embrocation.

Chaulmoogra, Ta-fung-yu, CHIN., is obtained from the seeds of the Gynocordia odorata.

Cinnamon oil, Kwei-pi-yu, is a volatile oil, used as a

perfume and flavouring ingredient, and exported from Canton; it is made from the leaves and twigs of the Cassia or Cinnamomum iners, and resembles the genuine oil of cinnamon prepared in Ceylon.

Clove oil, *Teng-hiang-yu*, made at Canton, is a heavy oil of a pale reddish-brown oil colour.

Cotton seed oil, *Mien-yu*, expressed from cotton seeds, is used for lamps, in cookery, and externally as an unguent.

Croton oil, *Pa-tau-yu*, is a drastic purgative.

Fish oil, *Yu-chi*, is obtained from the porpoise, which ascends the Yang-tze river as far as Hankow; the oil is used for lamps and to make putty.

Fish oil, *Hwang-ku-yu*, is obtained from a small fish, the oil has a strong fishy smell, is used to destroy pedicular, parasitic, and other skin affections, and in veterinary practice.

Ground nut or pea nut oil, *Hwa-sang-yu*, is from the *Arachis hypogaea*.

Hemp seed oil, *Ho-ma-jin-yu*, CHIN.

Linseed oil, *Hu-ma-yu*, from a species of *Linum*; is used medicinally, internally and externally.

Myrrh oil, *Muh-yoh-yu*, is a reddish oil, having the smell of myrrh, and used in Cochinchina to dress ulcers.

Olive oil, *Yang-kau-yu*. The fruit of the *canarium* is sometimes mistaken for the olive.

Pine oil, *Sung-i*, a coarse turpentine obtained by heating pine woods; it is used in skin diseases.

Peppermint oil, *Poh-ho-yu*, is made in Canton from several kinds of mint; used in sweetmeats and as a perfume.

Persimmon oil, *Po-tsze-yu*, a glutinous oil from the *Embryopteris glutinifera*. The fruits are of the size of an apple, and are crushed to obtain the dark resinous thick juice. It makes an excellent varnish for the paper umbrellas. An extract from the fruit is an internal and external astringent.

Poppy seed oil, *Ying-tsze-yu*, is used for culinary purposes.

Roses, oil of, *Mei-kwei-yu*, an essential oil, used by Chinese women as a scent for the hair.

Sandal-wood oil, *Tan-hiang-yu*, a thick yellow fragrant oil extracted from sandal-wood, used to colour woods in imitation of sandal-wood.

Sesamum oil, *Chi-ma-yu*, also *Hiang-yu*, from the black and white sesamum seed.

Stone chestnut oil, *Shih-li-yu*, obtained by expression from the fruit of the *Aleurites triloba*; it is superior to linseed-oil as an economic substance, and is used medicinally, with properties like castor-oil.

Sunflower oil, *Kwei-tsze-yu*.

Sweet basil oil, *Su-tsze-yu*, is expressed from the seeds of a species of *Ocimum*. It is a fine drying oil, used in painting on porcelain and for varnishing.

Tallow tree seed oil, *Tsing-yu*, the *Stillingia sebifera*, is clear but of a dark colour; about fifteen or sixteen catties of it can be obtained from one pikul of berries. It is used to varnish umbrellas, to dress the hair, to fill lamps, and to mix with the tallow of candles; given internally, it is purgative and emetic.

Turpentine oil, *Tuh-nau hiang-yu*.

B. Solid Oils.

Vegetable butters is a name given to the concrete oils of certain vegetables, from the resemblance to the butter obtained from the milk of animals. The term is also occasionally, but improperly, applied to some vegetable products which are entirely of a waxy nature, such as the wax of *Myrica cerifera*. The name is likewise bestowed in Siberia on certain Algae, species of the genus *Nostoe*, such as *N. prunifera*. The most important vegetable butters are produced by species of *Bassia*, and by certain palms, such as the *Cocos butyracea*, and the *Elais Guineensis*; the former is of great utility to the inhabitants of Brazil, where it grows naturally, and to the Negroes of St. Domingo, where it is cultivated; while the latter is very serviceable to the natives of Guinea. The generally known solid oils or vegetable butters are as follow:—

Butter of the great Macaw tree, from *Acrocomia fusiformis*.

Almond butter.

African butter, also called Shea butter, from the *Bassia Parkii* or *Pentadesmia butyracea* of Sierra Leone.

Galam butter or ghi, from *Bassia butyracea*, Fulwa or Phulwara, HIND., a native of Nepal and Almora in Northern India.

Bassia latifolia and *B. longifolia* oils separate into two portions, one on the surface, fluid, and of a pistachio green colour; the other of a brownish-green, and almost solid.

Kawan solid oil, of a pale-greenish colour, a good deal resembling the oils of the *Bassia* in character, though rather harder, and approaching more in properties to myrtle wax, was shown at the Great Exhibition of 1851, from Singapore. It was supposed to be the produce of the tallow tree of Java, called locally Kawan, probably a species of *Bassia*. It is very easily bleached; indeed, by exposure to air and light, it becomes perfectly white.

Broonga malagum oil from Masulipatam, separates into three portions, the uppermost fluid resembling brown sherry, the middle of the consistence of ghi, and a brownish-yellow, and the lowest almost solid, and of a hair-brown colour.

Camujay tree oil of Travancore is a dark gelatinous mass, of the consistence of blanc-mange.

Carap or carab vegetable butter, from *Carapa Guianensis*, a large tree in Trinidad and British Guiana.

Butter of cinnamon, from *Cinnamomum verum* or *C. Zeylanicum*. By strong decoction, the fruit yields a concrete oil, called cinnamon wax, used for candles, and which exhales a fragrant odour while burning.

Butter of cocoanut, from *Cocos nucifera*, which yields a concrete oil, but perhaps expensive. Cocoanut oil, prepared by rasping the pulp of fresh ripe cocoanut, adding a little hot water, squeezing and boiling the milky juice until the water has evaporated, and filtering through paper, produces an oil which separates into two portions, the one fluid and limpid, the other a solid concrete substance of a pure white colour, which in the shade remains unliquified at all temperatures.

Butter of palm oil, from *Elais Guineensis*, a native of Africa and America. The concrete palm oil is much esteemed in Europe for unguents, and has been lately recommended for culinary purposes.

Solid palm oil is an export from the western coast of Africa, of the consistence of hard butter.

Erysimum perfoliatum is cultivated in Japan for its oil-seeds.

Fevillea scandens, the solid oil of the horse eyes and cacoons of Jamaica, is white and hard.

Gambooge butter, a product of the *Garcinia pictoria*, Roxb., is called *Mukke tylum*, TAM.; *Arasana ghoghry yennai*, CAN. The tree grows abundantly in Mysore and the western coast jungles. Cocum butter is from *Garcinia purpurea*? or *G. pictoria*.

The Gambooge butters are solid and of a deep-leek-green colour. The *G. pictoria* grows abundantly in parts of Mysore and the western jungles. The oil is procured by pounding the seed in a stone mortar and boiling the mass until the butter or oil rises to the surface. 2½ measures of seed yield one seer of butter, and it is sold at the rate of annas 1.4 per seer of rupees 24, in the Nuggur division of Mysore, and is there used as lamp-oil and as ghi.

Hibavania oil of Canara, solid, of a clove-brown colour.

Hydnocarpus inebrians oil, the Thortay oil of Canara, a very valuable vegetable solid oil, of the consistence of ordinary hard salt butter, used for sores.

Mooragana butter, or solid oil of Canara, is used medicinally as an ointment for the wounds of cattle injured by tigers. It is said to be produced from a forest tree growing in the Canara jungles. It is dark-brown, and is the most solid of the solid oils.

Butter of nutmeg, from *Myristica moschata*, from the Moluccas, is obtained by bruising the nutmegs into a paste, which is compressed in bags between hot metallic plates. A solid oil is from *Myristica (Virola) sebifera*, of British Guiana.

Odul or Adul oil of Travancore, from *Jatropha gleeuolensis*, separates into two portions,—the upper, fluid, of the colour of golden sherry; the lower, reddish-white, of the consistence of ordinary hard salt butter.

Solid oil is obtained from the Demerara butter tree, *Saourari*, *Pekea tuberculosa*.

Japan wax, from *Rhus succedaneum*. Candles used in Japan are made of an oil said to be pressed from its seeds. This oil becomes, when concrete, of the consistence of tallow, and is not so hard as wax. The province of Fetsigo more particularly produces this tree. A vegetable wax is from Shanghai.

Shacotty oil of Canara is used for cutaneous eruptions. It separates into two portions; the upper, yellowish and fluid, and the lower, brownish-red, and of the consistence of ghi.

Mijo or **Japan butter** is from *Soja hispida*, Japan and China.

Sterculia foetida oil, in Tamil *Coodiray pusjun yennai*, is thick at all seasons of the year.

Chinese vegetable butter from the *Stillingia sebifera*; much in use in China. The number of these trees in the province of Che-kiang is immense. In the eastern parts of China, the product of the tallow tree, *Stillingia sebifera*, and in the south, beef and hogs' tallow, are used in the manufacture of candles. Wax is only employed to encase the tallow or lard, which, from the heat of the climate and its unclarified condition, never becomes hard.

Terminalia bellerica oil separates into two portions,—the one fluid, of a pale olive-green colour, and the other white, floccular, and of the consistence of ghi.

Butter of cacao, from *Theobroma cacao*; 1000 parts of the seed yield 300 parts of a concrete oil or butter, of a most agreeable flavour.

Indian vegetable butter, **Pincey butter**, or **Doopada solid oil**, is from the *Vateria Indica* tree, which grows on the western coast of India, and in Canara. It is white or yellowish-white, of the consistence of hard salt butter, and in the shade remains always solid. It can be procured in quantities in Southern India. It is used for lamps principally, but is very suitable for soaps and candles. It is prepared by cleaning the seeds, then roasting and grinding them into a mass. In making it, to five seers of seed add twelve seers of water, and boil until the oil rises to the surface. Remove the oil, stir the contents of the vessel, and allow it to stand until the following day, when more oil will be observed on the surface, which may be collected, and the process repeated.

C. Wood Oils.

This class of oils is obtained for the most part from the Burmese coast and the Straits Settlements. They are usually procured by tapping species of the noble order *Dipterocarpeae*, and applying heat to the cavity. The oil which flows from the wound is a mixture of a balsam and volatile oil, and when applied as a varnish to wood or other substance, the oil evaporating deposits a hard and durable coat of resin. They are chiefly used as natural varnishes, either alone or in combination with coloured pigments, also as a substitute for tar in paying the seams of shipping, and for preserving timber from the attacks of white ants. They are said also to be useful as an ingredient in lithographic inks.*

Wood oil of Malacca is obtained from a large tree of the dipteraceous family, which is very common in the dense jungles of the Malay Peninsula, and grows to a great height. When not lopped too soon, the base of the trunk is of immense girth; the wood is reddish-brown, and has a smell not unlike that of English fir; the bark is smooth, the leaves alternate, pinnate, and exstipulate; fruit a one-seeded drupe; seed angular and anatropal. The oil when permitted to remain at rest divides itself into two layers, the upper consisting of a clear chestnut-coloured liquid balsam, and the lower being in appearance like flakes of granulated sugar, and consisting probably of the surplus resin deposited by the action of the atmosphere.

Minia kruing, a wood oil of Borneo, extracted by cutting a large hole in the tree, into which, fire being kindled, the oil distils. To obtain wood oil of the *Dipterocarpus turbinatus*, a large incision is made in the trunk at about 30 inches from the ground, in which a fire is lighted, and kept up until the incision is charred; soon after this, the liquid begins to flow, and is conducted by a little trough

into a vessel placed to receive it. The average produce of the better trees in a single season, is 30 gallons. Wood oils are produced by *Dipterocarpus incanus*, *D. alatus*, and *D. costatus*. The first of these three is reputed to yield the best sort, and in the greatest quantity. When filtered, it is a transparent liquid, of a somewhat dark-brown when seen by transmitted light, but appearing opaque and of an obscure green if viewed by reflected light. It possesses, therefore, in a very marked degree, the dichroism observable in all resin oils obtained by the action of fire. This character determines the nature of wood oil, and shows that it is not simply a natural product like copaiba, but that it is in part the result of a liquid modification of the *Dipterocarpus* resin effected by the agency of heat.

Moulmein wood oil is of somewhat greater consistence than olive oil. It has a sp. gr. of .964, and possesses an odour and taste very analogous to those of copaiba. It dissolves in twice its weight of absolute alcohol, with the exception of a minute residue which is deposited upon repose. A curious property of this oil is that of solidifying when heated in a closed vial to 266° F.; at this temperature the oil becomes turbid, and so gelatinous, that it is not displaced upon the inversion of the vial. After cooling, the solidification is yet more perfect; but a gentle warmth, assisted by slight agitation, restores its former liquidity.

Teak-wood oil, an opaque, dull, ash-coloured oil, procurable in most of the large bazars of India; when allowed to rest for some time, it separates into two layers,—an upper dark-coloured clear stratum, and a lower and more solid deposit. Its chief use is for applying to wood-work of all sorts, either alone as a natural varnish, or in combination with certain resins.

Deodar or **Shemannahu** oil, of the *Erythroxylon areolatum*, is an empyreumatic medicinal oil.

Wood oil from China is one of the substances of which the much-prized China lacquer is made. It is used in Singapore for painting the beams and wood-work of native houses, and may also be mixed with paint when not exposed to the sun.

Sissoo-wood oil, of *Dalbergia sissoo*, is an empyreumatic medicinal product.

Camphor wood oil, from the *Dryobalanops camphora*, belongs to the class of volatile oils. It is used largely in Singapore as a substitute for turpentine, and sells at from 15 to 20 cents a bottle.

D. Oils alphabetically arranged.

Aleurites triloba, **Belgaum walnut oil**—**Hidjlee** **Badam ka tel**, **HIND.**; the **Molucca tree** produces the **Lambang nut**. The nut yields a very large percentage of oil, and the tree is very prolific. The nuts are strung upon a thin strip of bamboo, and when lighted burn like a candle.

Allium sativum, **Garlic oil**—**Vellay-pundoo yennai**, **TAM.** A medicinal oil everywhere obtainable.

Almond oil is that of the common almond, *Amygdalus communis*; also the oils of the Indian almonds, the fruits of the *Terminalia catappa* and *Canarium commune*—**Badam ka-tel**, **HIND.**; **Minia badam**, **MALAY.**; **Roughan-i-badam**, **PERS.**; **Ingudi-tailam**, **SANSK.**; **Badamcottay-yennai**, **TAM.**; **Badama vittulu nune**, **TEL.** It is not wholly an article of import, but chiefly so. The almond tree is a native of the Himalaya, and is abundant in Kashmir. The oil is colourless, or very slightly yellow, and is congealed with difficulty. Both varieties of almond, bitter and sweet, are imported into the northern parts of India from Ghorband, and into the southern parts from the Persian Gulf. This oil, as imported into Britain, is principally the produce of the **Arzo tree**, forests of which grow to the south of the empire of Morocco, which produce an exceedingly hard species of almond. Its fruit consists of two almonds, rough and bitter. In manufacturing the oil, they are well rubbed or shaken in a coarse bag, to separate a bitter powder which covers the epidermis; they are then pounded to a paste in marble mortars, and the paste subjected to a press.

Anacardium occidentale, Cashew-nut oil—Kajoo ka tel, HIND.; Moondree cottay yennai, TAM. The light-yellow, sweet-tasted, and edible oil obtained from the nut of this tree is in every respect equal to either olive or almond oil. It is, however, very seldom prepared, the nuts being used as a table fruit. Another oil is prepared from the *Anacardium occidentale*, and called Cashew apple oil. It is a powerfully vesicating oil obtained from the pericarp of the Cashew apple, and has been long known to the native physicians of India. It much resembles in its properties the acrid oil obtained from the marking nut, *Semecarpus anacardium*.

Andropogon Martini, the Roosa grass oil, differs but little either in appearance or quality from the *A. citratum*, lemon grass oil, and is used for the same purposes. Roosa grass, a native of the low hills along the base of the Himalaya, at Hardwar and the Kheeree pass, is also found at Asirgarh, and in Malwa generally. The roots are used by the natives of Northern India in intermittent fevers. In habit and taste it comes remarkably near *A. citratum*. The oil is used as a stimulant internally and externally, much in the same manner as oil of cajuput. Roosa oil is the celebrated grass oil of Nemaar. It is probable that the several species furnish oils of similar characters.

Andropogon citratum—Karpura-pillu-tylum, TAM.; the Lemon grass oil, is obtained by distillation from this grass, which grows plentifully in many parts of British India. It is much used as a rubefacient for rheumatic affections, as well as in perfumery, for which purposes it is said to be largely exported from Travancore. When newly made, this oil is of a light straw colour, but age changes it to a deep red.

Anethum sowa, Bishop's weed. Its carminative seeds yield by distillation a very useful oil, which is given medicinally as a stomachic.

Arachis hypogaea, Ground-nut oil—Willayati-moong ki phulli-ka tel, HIND.; Vayr-cuddala-yennai, TAM.; Manila noona, TEL. This valuable oil is exported to a large amount. It is obtained by expression from the seeds. The seeds yield about 43 per cent. of a clear straw-coloured edible oil, which is an excellent substitute for olive oil, and makes a good soap. Perfect decolorization considerably enhances the value of this oil.

Argemone Mexicana, the Brumadundoo, or Coorookoo, or Prickly poppy oil, Jamaica yellow thistle oil—Faringi datura ka tel, HIND.; Brumadundoo yennai, TAM.; Bramadundi noona, TEL. A pale-yellow limpid oil, almost colourless, may be obtained from the round corrugated seeds of the prickly poppy, which flourishes luxuriantly in all parts of India. It is used in lamps. The seeds are valued for fowls, and the mass from which the seed is expressed is found to be extremely nutritious to cattle.

Azadirachta Indica and *Melia azedarach*, Margosa or Neem oil—Neem ka tel, HIND.; Vapum yennai, TAM.; Vapa noona, TEL. This valuable and much used medicinal oil is obtained by either expression or boiling from the seeds of species of *Melia* and *Azadirachta*, which are common throughout Asia. Margosa or Neem oil is made from the pericarp or fleshy part of the fruit. Dr. Maxwell found this oil equally efficacious with cod-liver oil in cases of consumption and scrofula. He began with half-ounce doses morning and evening, which were gradually reduced. It enters much into the practice of native physicians, by whom it is administered internally as an anthelmintic, and externally as a liniment in rheumatism and headache, and as an application to ulcers. The oil is of a deep-yellow colour, has a strong smell, and an unpleasant bitter taste.

Bassia oils. The seeds of three species of *Bassia* trees, indigenous to British India, and of one of *E. Africa*, yield solid oils. The trees supply at the same time saccharine matter, spirit, and an oil fit for both food and burning in lamps. They are—
a. The Illepe (*B. longifolia*) is abundant in the S. parts of Hindustan generally, the Madras Presidency, and the northern province of Ceylon. The oil-cake is rubbed on the body as soap, and seems admirably

adapted for removing the unctuousity of the skin caused by excessive perspiration, and for rendering it soft, pliable, and glossy, which is so conducive to health in a tropical climate. The oil is white and solid at common temperatures, fusing at from 70 to 80 degrees. It may be advantageously employed in the manufacture of both candles and soap. In Ceylon and some parts of India, this oil forms the chief ingredient in the manufacture of soap. It is seldom sold in the bazar, but the seeds are collected, and the oil manufactured for private consumption. The seeds contain about 30 per cent. of oil of a bright-yellow colour. Its chief use is, however, for burning in lamps, and as a substitute for butter in native cookery.

b. Mahwa (*B. latifolia*) is common in many parts of British India. The oil a good deal resembles that last described, and may be used for similar purposes. It is solid at common temperatures, and begins to melt at about 70 degrees.

c. Vegetable butter is obtained from the Choorie or Choonie (*B. butyracea*). It is common in certain of the hilly districts, especially in the eastern parts of Kamaon; in the province of Dhoti it is so abundant that the oil is cheaper than ghi or fluid butter, and is used to adulterate. It is likewise commonly burnt in lamps, for which purpose it is preferred to coconut oil. It is white and solid, fusible at about 120 degrees, and exhibits very little tendency to become rancid when kept.

d. Shea or Galam butter is obtained in Western Africa from the *Bassia Parkii* or *Pentadesma butyracea*, a tree closely resembling the *B. latifolia* and other species indigenous to Hindustan. According to Park, the tree is abundant in Bambara; the oil is solid, of a greyish-white colour, and fuses at 67 degrees, and it is used for cooking, burning in lamps, etc.

Bryonia oil—Toomuttikai yennai, TAM.; Boddama kaia noona, TEL. This oil is used for burning in lamps in those parts of British India where the fruit abounds. It is extracted by boiling in water. **Buchanania latifolia** or Cheerongie oil, *Chirongia sapida*—Cheeronji or Charooli ka tel, HIND.; Saraypuppo noona, TEL. The kernels of this tree are eaten by the natives to promote fatness; they abound in a straw-coloured, sweet-tasted, and limpid oil. The tree grows plentifully in Mysore and Cuddapah.

Butea frondosa, Moodooga oil. The seeds of this tree yield a small quantity of a bright, clear oil, which is sometimes used medicinally.

Cabbage seed oil is prepared in small quantities.

Calophyllum calaba? an oil under the name of Cheroo pinnacottay was sent from Cochin.

Calophyllum inophyllum, Pinnacottay or Poon-seed oil—Surpun ka tel, HIND.; Pinnay yennai, TAM.; Pinnay noona, TEL. The fresh seeds of the Alexandrian laurel, when shelled and subjected to pressure, yield a dark-green oil of a peculiar odour. Old seeds yield a higher coloured and thicker product. It is used for lamps and vessels, but it appears to be chiefly valuable as a medicine. It is seldom procurable in the bazar, but is expressed when required.

Cannabis sativa, Hemp-seed oil—Ganja yennai, TAM.—is obtained by expression from the seeds of the common hemp. In Russia, the oil is much used for burning in lamps, but it is unknown to the natives of India.

Cardamom seed oil is well known.

Carthamus tinctorius, Safflower oil—Kurroo, Coosum ka tel, HIND.; Chendoorookoo yennai, TAM.; Koosumba noona, TEL. A light-yellow clear oil is obtained from the seeds of the plant.

Tuntapoo oil (*Cassia tora*?), an empyreumatic medicinal substance called tuntapoo oil, is known about Masulipatam.

Celastrus paniculata, Malkungunee; staff tree—Malkungunee ka tel, HIND.; Valuluvu yennai, TAM.; Bavungi noona, TEL. The deep scarlet-coloured oil obtained by expression from the seeds of this shrub is used in medicine; the seeds submitted to destructive distillation yield the *Oleum nigrum* or Vaylari tylyum, TAM., which is used either

alone or in combination with other ingredients in the treatment of Beri-beri.

The Citrus species, aurantium, bergamia, decumana, limetta, limonum, medica, and oils of neroli and bergamot, highly esteemed as perfumes, are distilled from the flowers and rind of the fruit of species of citrus.

Cocos nucifera, Coconut oil—Narel-ka-tel, HIND.; Taynga yennai, TAM.; Tencaya noona, TEL. The nut having been stripped of the husk or coir, the shell is broken, and the fatty lining is taken out. This is called cobra, copra, or copperah in different localities. Ninety pounds of it are thrown into a mill with about three gallons of water, and from this is produced 7½ gallons of oil. The copra in its unprepared state is sold, slightly dried, in the market. It is burned in iron cribs or grates, on the top of poles or torches in processions, and as means of illumination for work performed in the open air at night. In Europe, the oil is used for candle and soap manufacture, for lubricating machinery, etc. etc.; in India, for making soap, anointing the person, for cookery, lamps, and in medicine. Emphyreumatic oil and pyroligneous acid are obtained by the destructive distillation of coconut shells.

Croton tiglium, Croton or Napalah oil—the Jumalgotay ka tel, HIND.; Neervalum yennai, TAM.; Naypalum noona, TEL. This medicinal oil is a drastic purgative.

Cucumis colocynthis, Colocynthis seed oil.

Cucumis melo, Melon seed oil. Pitcha pusjum, the Tharbooz, Khurbooz, or pumpkin seed oil.

Cucurbita maxima, Cucurbit seed oil—Valerikai yennai, TAM.; Thosa noona, TEL. A clear edible oil. Nearly all the species of gourds and melons and cucumbers yield mild, clear, culinary oils; the skin of the seed is removed, and the inside, under the name of maghz, khyiar, dadu, etc., sold, and the oil expressed.

Eriodendron anfractuosum. A dark-brown though clear oil is obtained by expression from the seed of this silk cotton tree, the fibre of which is used as a stuffing for pillows, mattresses, etc. etc.

Garcinia pictoria, Gamboge butter (Rox.)—Arasina-goorghy yennai, CAN.; Mukki-tylum, TAM. A solid butter is contained in the seeds of the gamboge tree, a species closely allied to the *G. purpurea*, which produces the cocum butter. The gamboge tree grows abundantly in certain parts of the Mysore and western coast jungles. The oil is procurable in moderate quantities. It is prepared by pounding the seed in a stone mortar, and boiling the mass until the butter or oil rise to the surface. Two and a half measures of seed should yield one seer and a half of butter.

Ghirgilly oil from Canara is considered an excellent remedy for rheumatic pains.

Guilandina bonduc, bonduc nut oil—Calichai-kai yennai, TAM. This oil is mentioned by Ainslie as being considered useful in convulsions and palsy. The seeds themselves are believed to possess tonic virtues. Used solely as a medicine.

Guizotia oleifera, Ramtil oil—Kala til ka tel, HIND.; Valesaloo noona, TEL. This sweet-tasted, edible oil is plentiful in the Mysore, Vizagapatam, and Ganjam districts. It is used for nearly the same purposes as sesamum.

Helianthus annuus, sunflower, is raised in Tartary chiefly for the oil expressed from its seeds. The people eat the seeds, which, when boiled in water, taste not unlike boiled Indian corn, are employed in fattening poultry, and are said to increase the number of eggs more than any other kind of grain. Pheasants and partridges eat them with great avidity.

Hura crepitans, sand-box tree, has been introduced from Jamaica. Its seeds yield by expression an oil; but as the whole tree abounds in poisonous matter, this oil probably partakes of its deleterious nature.

Hydnocarpus inebrians? Neeradimootoo oil, Neerada—Jungli badam ka tel, HIND.; Mootoo yennai, TAM. This valuable oil was sent to the Madras Exhibition of 1855 under the various names of Neeradeemootoo, jungle almond, Maroty, Tamana, Mar-

vetti, Neervetti, Shorty, and Soorty. It is in great repute as a medicine amongst native practitioners, and the kernel enters largely into their prescriptions.

Iguana oil, a medicinal oil.

Inga dulcis, Coorookoopilly. Seeds yield by expression a light-coloured oil, about the consistence of castor oil.

Jatropha curcas, or Curcas purgans, angular-leaved physic-nut oil—Jangli erandi ka tel, HIND.; Cattamanak yennai, TAM.; Adavi amedapoo noona, TEL. This oil has of late been imported into Britain as a substitute for linseed oil; it is expressed from the fruit of a species of *Jatropha*, which abounds in all parts of the Madras Presidency. The colour is somewhat paler than the best linseed oil. It is now chiefly used in lamps.

Jatropha glauca, glaucous-leaved physic-nut—Addale or Authaulay yennai, TAM. This in appearance approaches castor oil. It is fluid and light straw-coloured. It is now chiefly used medicinally as a counter-irritant, but, if procurable in sufficient quantity, seems likely to prove a useful oil.

Lepidium sativum, Country cress oil—Aliveri yennai, TAM. This oil is extracted from the seeds of the Chinese wall-cress. It must not be confounded with linseed oil, the Tamil name of which is the same as that of the present article.

Linum uaitaisimum, Linseed oil—Ulsee ka tel, HIND.; Aliveri yennai, TAM.; Aveesce noona, TEL. Lint plant has been cultivated to a limited extent in India; the oil is inferior to that imported from England, from having been imperfectly freed from mucilage, which prevents its drying.

Macassar oil is used by the natives as a hair oil. It is supposed to be from *Carthamus tinctorius* seed.

Mesua ferrea, Naga-sumpunghoe oil, is a valuable oil, procurable in Canara. It is used both as a lamp oil and as a healing application to sores.

Mimusops elengi. Mimusops is a medicinal oil, obtainable in tolerably large quantities in some parts of the country. It is known in England. That of M. Kaki, the Bakul oil, is used medicinally.

Mooroogana tallow, even at high temperatures, is perhaps the most solid oil with which we are yet acquainted. It is made in Canara. If procurable in large quantities, and at a moderate cost, it promises to be a valued material for the manufacture of candles, etc. It is used for medicinal purposes, and as a cure for cattle wounded by tigers, etc.

Moringa pterygosperma—Sahujna, HIND.; Morunghy yennai, TAM.; Morunga noona, TEL.; Ben or Moringa oil. Ben nut oil has long been considered valuable on account of the lengthened period which it may be kept without contracting rancidity. The tree is common in all parts of British India; the flowers, leaves, and fruit are eaten by the natives, and the rasped root is used by Europeans as a substitute for horse radish, to which circumstance it owes its common name of horse-radish tree. The oil is seldom made in India, nor does it now form an article of export.

Myristica moschata, Nutmeg butter—Japhul ka tel, HIND.; Jadipootri tyum, TAM.; Jaikarra noona, TEL. It is obtained by expression from the nutmeg; it has an aromatic smell from the volatile oil it contains.

Neat's-foot oil is used as a softener of leather, etc.

Nigella sativa, Fennel-flower oil—Kulonjee, Siah danah, HIND.; Carun acragum, TAM.; Nalla gillikarra, TEL. The black aromatic seeds of the *Nigella sativa* yield by expression a dark-coloured fragrant oil.

Olea dioica or Pootroojie oil, wild olive, obtained by expression from a handsome tree growing plentifully in Canara and Mysore.

Papaver somniferum, Poppy oil—Khush-khush ka tel, HIND.; Caaa-casa noona, TEL.; Caaa-casa yennai, TAM. The poppy is largely cultivated throughout Malwa and the opium districts, where the drying oil obtained from the seed is more extensively used than any other, both in lamps and as food. By exposure to the rays of the sun in shallow vessels, this oil is rendered perfectly colourless. It is much prized by European artists.

Polanisia viscosa, viscid Cleome oil—Nahi-cadagho,

TAM. This warm and pungent little seed, when subjected to very powerful pressure, yields a moderate percentage of a light olive-green oil, which promises to be useful for purposes requiring a very liquid oil.

Poonga or Kurung oil, or Pongamia glabra—Kuruuj ka tel, HIND.; Kanogoo noona, TEL.; Poonga yennai, TAM. This oil, which in some parts of the Indies is used to a large extent in adulterating lamp-oil, is expressed from the seeds of a tree common in most parts of the Madras Presidency, where it is chiefly used as a lamp-oil by the poorer classes.

Ricinus communis, Castor-oil; small-seeded variety—Barik erundi ka tel, HIND.; Sitt-amanaku yennai, TAM.; Chitt-amindialoo noona, TEL. Two varieties of the *Ricinus communis*, one being small and the other large seeded, are produced all over India. The small-seeded variety yields the better product, and is employed in preparing the oil exported for medicinal purposes. The fresh seeds, after having been sifted and cleaned from dust, stones, and all extraneous matters, and slightly crushed between two rollers, freed by hand from husks and coloured grains, are enclosed in clean gunny. They then receive a slight pressure in an oblong mould, which gives a uniform shape and density to the packets of seed. The 'bricks,' as they are technically called, are then placed alternately with plates of sheet iron, in the ordinary screw or hydraulic press. The oil thus procured is received in clean tin pans, and water in the proportion of a pint to a gallon of oil being added, the whole is boiled until the water has evaporated; the mucilage will be found to have subsided and encrusted the bottom of the pan, whilst the albumen, solidified by the heat, forms a white layer between the oil and the water. Great care must be taken in removing the pan from the fire the instant the whole of the water has evaporated (which may be known by the bubbles having ceased), for if allowed to remain longer, the oil, which has hitherto been of the temperature of boiling water, or 212°, suddenly rises to that of oil, or nearly 600°, thereby heightening the colour and communicating an empyreumatic taste and odour. The oil is then filtered through blanket, flannel, or American drill, and put into cans for exportation. It is usually of a light straw-colour, sometimes approaching to a greenish tinge. The clean seeds yield from 47 to 50 per cent. of oil, worth in England from 4d. to 5d. per lb. This oil is chiefly used as a mild purgative. Soap of good quality may be made of it, but the cost, and disagreeable smell which it communicates, preclude its general use. The qualities of clearness and limpidity do not arise from any superiority of the seed, or care in extraction, but from repeated decolorization with animal charcoal, which, in the opinion of many eminent medical men, considerably detracts from its strength and efficacy. When manufactured in the ordinary native mill, this oil is sometimes used by the richer classes in lamps. The sun's rays also are used for decolorizing.

Castor-oil, extracted hot, differs from the preceding oil in the mode of preparation. The seeds are boiled for two hours in water, dried for three days in the sun, freed from the shells, pounded, and then boiled in fresh water, until the whole of the oil has risen to the surface. This is the sort generally used in medicine by native practitioners; it is straw-coloured, and free from any unpleasant taste or smell.

Ricinus communis, Castor-oil or lamp oil; large-seeded variety—Chiragh-ka-tel, HIND.; Vullak ennai, TAM.; Ped-amidam, TEL. The oil which is obtained from the large-seeded variety of the *Ricinus communis* is sometimes drawn cold; it is then of a straw-colour, scarcely distinguishable in quality from the oil of the small-seeded variety. It is, however, more usually extracted by heat, and forms the common lamp-oil of the bazar of S. India. The seeds having been partially roasted over a charcoal fire, both to coagulate the albumen and to liquefy the oil, are then pounded and boiled in water until the oil rises to the surface. The

roasting process, however, gives it a deeper red colour and an empyreumatic odour.

Sahocottay oil, from Canara, is used for cutaneous diseases.

Santalum album, Sandal-wood oil—Chundana pusjhum yennai, TAM. The seeds of the sandal-wood tree yield by expression a thick and viscid oil, which is burnt by the poorer classes in lamps. Sandal-wood oil, Chundana yennai, TAM., is made in Salem, Mysore, and Canara, from sandal-wood.

Sapindus emarginatus, Soap-nut oil—Ruethay ka tel, HIND.; Poovandi cottay, TAM.; Poongum-kai yennai, TAM.; Koocooli noona, TEL. This semi-solid oil is used medicinally, and is extracted from the kernel of the soap-nut. Its cost prevents its general use.

Sarcostigma Kleinii, Poovana or Poovengah oil, made in Tinnevely, Travancore, and Cottayam, has been long known as medicinal oil; used largely for rheumatism on the western coast. It seems especially to merit further investigation.

Semecarpus anacardium, Marking-nut oil—Bhilawan ka tel, HIND.; Shaying cottay yennai, TAM.; Nellojidi noona, TEL. The acid and vesicating oil which is contained between the two laminae of the pericarp of the marking-nut is used as a preventive against the attacks of white ants, and by native practitioners in rheumatic and leprosy affections. By boiling the whole nut not divested of its pericarp, an oil is also obtained which acts as a blister. The preparation or collection either of the oil or acid juice is liable to cause much irritation and inflammation of the hands, face, etc., of those engaged in the work.

Sesamum orientale, Gingelly oil or Sesamum oil (black-seeded variety)—Meetha Til ka tel, HIND.; Nool ennai, TAM.; Mundie noona, TEL. This oil is perhaps consumed to a greater extent than any other by the natives of India, and is, moreover, second only to coconut oil in its importance as an article of commerce. Two varieties of sesamum are cultivated for the sake of the oil:

The 1st sort of gingelly seed is the produce of the plant which is sown in the month of March, after the rice crop, and is irrigated twice, once at sowing, and once afterwards. The seed, which is black, and is called 1st sort gingelly, from the fact of its yielding the largest percentage of oil, ripens in May, and in Rajamundry sells at the rate of Rs. 60 per candy of 500 lbs. The oil obtained from both varieties sells there at the same price, viz. Rs. 2.14.6 to Rs. 3 per maund of 25 lbs., according to quality.

The 2d sort of gingelly is sown in June, and produces a red seed. The plant, although a little larger, resembles in most respects the former; it has, however, a somewhat longer leaf, and the flower differs a shade or two in colour. A candy of 500 lbs. of this seed sells at Rs. 57.8. The price of the oil is the same as that of 1st sort gingelly. This seed about A.D. 1850 began to be largely exported to France, in consequence of which the price doubled.

1st sort gingelly oil. The great disparity of colour observed in the samples of this oil is merely to be attributed to the mode of preparation. The method sometimes adopted is that of throwing the fresh seeds, without any cleansing process, into the common mill, and expressing in the usual way. The oil thus becomes mixed with a large portion of the colouring matter of the epidermis of the seed, and is neither so pleasant to the eye, nor so agreeable to the taste, as that obtained by first repeatedly washing the seeds in cold water, or by boiling them for a short time, until the whole of the reddish-brown colouring matter is removed, and the seeds have become perfectly white. They are then dried in the sun, and the oil expressed as usual. This process yields 40 to 44 per cent. of a very pale straw-coloured, sweet-smelling oil, an excellent substitute for olive oil, for which indeed it is largely sold. In India it is chiefly used in cookery, in anointing the person, for making soap, and for burning in lamps. In Europe it is chiefly used for the manufacture of soap and for burning in table lamps, for which it is better suited than coconut oil, owing to the lower temperature at which the latter congeals.

2d sort gingelly oil, in commerce erroneously called rape (Khorasanee yellow), is expressed from a variety of sesamum, and differs but little from the one above mentioned.

Sinapis species, mustard oil—Rai ka tel, HIND.; Kadaghooyennai, TAM.; Avalu noona, Sarava noona, TEL. Five or six species of *Sinapis* are cultivated in all parts of India, for the sake of the oils they yield; those most frequently seen are *S. glauca*, *S. toria*, and *S. racemosa*. The seeds of the *Sinapis alba* yield by expression 36 per cent. of a bright-yellow, pleasant-tasted, edible oil, having a strong smell and slight taste of mustard. The seeds of *Sinapis nigra* yield only 28 per cent. of an oil in all respects similar to the above.

Sterculia foetida, fetid sterculia oil—Coodira pasjunyennai, TAM. This semi-solid oil is obtained by expression from the seeds of a large forest tree.

Strychnos nux vomica, Nux vomica oil—Carunjooty, CAN.; Mooyettie cottayennai, TAM. An empyreumatic oil prepared from the fresh nut, is used medicinally by native practitioners.

Terminalia bellerica, Bellerie myrobalan oil—Tanikai yennai, TAM. A medicinal oil obtainable in small quantities from the kernel of the Bellerie myrobalan; the drupe is used as a tanning material.

Terminalia catappa, Willd., Indian almond oil, the product of this species of *Terminalia*.

Terminalia chebula, Chebulic myrobalan oil. A medicinal oil procurable in very small quantities from the kernel.

Thespesia populnea, Portia nut oil—Paras-pipul, HIND.; Poorasam yennai, TAM. This deep, red-coloured, and somewhat thick oil, is obtained from the seeds of this tree, which grows in great abundance in the Peninsula. It is extensively planted as an avenue tree, for which its quick growth and the beauty of its flowers render it a favourite. The wood is used for boat-building and cabinet-work.

Thevetia nerifolia, the 'exile' oil. The kernels of the seeds of this common shrub yield by expression a clear bright yellow-coloured oil.

Vateria Indica, piney tallow or doopada oil—Piney yennai, TAM. This valuable tree, besides its oil, yields a resin nearly equal to copal. It grows plentifully in the jungles of the western coast. The oil is perfectly solid, even in hot climates, and is prepared by cleaning the seeds, then roasting and grinding them into a mass. To 5 seers of seed add 12 seers of water, and boil until the oil rises to the surface. Remove the oil, stir the contents of the vessel, and allow it to stand until the following day, when more oil will be observed on the surface, which may be collected, and the process repeated. The oil is principally used for lamps, but is very suitable for soaps and candle-making.

Wrightia antidysenterica, rosebay oil—Vaipallay yennai, TAM. A thick, scarlet-coloured, medicinal oil, partaking doubtless of the properties of the seed.

Oil manufacture, in British India, by means of the Kolhoo or oil press, is a wasteful process, in so far as there is no press or other contrivance employed to squeeze out residue of oil from the cake; and illustrative of the imperfect manner in which the oil is separated from the seeds, it may be mentioned that while a common pressman only obtained some $6\frac{1}{2}$ per cent., Boussingault, in his laboratory, from the same seeds actually procured 41 per cent. When the oil-cakes are meant for feeding stock, such loss is of little consequence, inasmuch as the oil serves a very good purpose; but when the cake is only intended to be used as a manure, it is a great loss, inasmuch as the oil is of little or no use in adding any food for crops to the soil. In Europe, to crack the shells of the hard seeds of lint and rape, they are passed between cast-iron rollers, which can be set at varying distances apart according to

the size and hardness of the seeds. Rollers do their work rapidly, but they require great power to work them. In some places vertical mill-stones or runners are used, while in others the hard seeds are passed between the rollers on to the runners. When the seed is sufficiently bruised by either or both of these means, it is collected into hair bags and placed in a wedge-press. In olive oil mills a screw press may be used, but the hardness and smoothness of the grains of lint and rape, and the cavities formed by the broken shell, which retain the oil, require the exertion of a stronger force. The hair bags containing the crushed seeds are placed between wedges of wood contained within a strong framing. The wedges are then driven down by a heavy ram or pestle worked by machinery until the pestle rebounds from them three times, when they are judged to be sufficiently tight. The oil thus obtained is of the best quality, and is kept distinct from that obtained by the after-process. The seeds come out of the bags in the form of flat cakes; these are broken up, and pounded in mortars with heavy stampers, which reduce the parenchyma of the seed to a fine meal, so that the oil can escape more freely when subjected to a second compression, which is now aided by heat. The pounded seed or meal is heated in a pan, to the temperature of melting beeswax, and is kept in agitation by a spatula worked by machinery. The meal is again put into hair bags and compressed, and the resulting oil is considered to be the best of the second quality. Another compression produces oil of the ordinary second quality. During the heating of the meal a little water is sometimes added, but in Holland this practice is considered to be injurious. The cakes are still fat and soft, and are sold as food for cattle; but the Dutch break them down and stamp them again. The result is an impalpable paste, which is hard with a very little water, and kept for some time at the temperature of boiling water, with diligent stirring. It is then subjected to the greatest pressure that has yet been applied, and the result is an oil of the lowest quality. The cake is dry and hard like a board, and is used for manure. Some of the small millers in Holland purchase oil-cakes from France and Flanders for the purpose of preparing this inferior oil.

There are, in India, two distinct forms of the native oil mill. One of these is used alternately as an oil or sugar mill; the other, of which there are some modifications, is a mortar with revolving pestle, and is of wood or stone—generally granite. Two oxen are harnessed to the gearing, which depends from the upper end of the pestle; a man sits on the top of the mortar, and throws in the seeds that may have got displaced. The mill grinds twice a day, a fresh man and team being employed on each occasion. When sesamum oil is to be made, about seventy seers measure, or two and a half bushels, of seeds are thrown in; to this ten seers, or two quarts and three-quarters of water, are gradually added; this, on the continuance of the grinding, which lasts in all six hours, unites with the fibrous portion of the seed, and forms a cake, which, when removed, leaves the oil clean and pure at the bottom of the mortar. From this it is taken out by a coconut-shell cup, on the pestle being withdrawn. Many seed oils are made almost entirely in the above way.

The oil mills at Bombay, Surat, Cambay, Kutch, etc., have a very strong wooden frame round the mouth of the mortar; on this the man who keeps the seeds in order sits. In Sind a camel is employed to drive the mill instead of bullocks. Castor-oil seed is thrown into the mill like other seeds, as already described; when removed, the oil requires to be boiled for an hour, and then strained through a cloth, to free it of the fragments of the seed.

Castor-oil, made from either the small or large varieties of the Ricinus, is an exception. This is first parched in pots containing something more than a seer each. It is then beaten in a mortar and formed into balls; of these, from four to sixteen seers are put in an earthenware pot, and boiled with an equal quantity of water for the space of five hours, frequent care being taken to stir the mixture to prevent it from burning. The oil now floats on the surface, and is skimmed off pure.

The cocoanut palm nut is first stripped of its husk, which furnishes the substance from which coir and its rope is made, the shell is broken, and the copra, or fatty lining enclosing the milk, is taken out. Three maunds, or ninety pounds of copra, are thrown into the mill with about three gallons (eleven cutcha seers) of water, and from this is produced three maunds, or seven and three-quarter gallons of oil. Copra, in its unprepared state, is sold slightly dried in the markets; it is burned in iron cribs or grates on the tops of poles, as torches in processions, and as a means of illumination for work performed in the open air at night. In 1878-79, 325,408 cwt. of oil-cake, value Rs. 9,95,648, was exported from India. In the year 1882-83, the export of oil-seeds from India was 643,184 tons, value Rs. 7,07,12,013; and oils to the value of Rs. 41,62,766. Mr. Edward Loarer's processes for making his vegetable wax, by solidifying castor-oil by sulphuric acid, would admit of that oil being exported in a convenient form. By one process the solidifying cost Rs. 4½, and by a cheaper process only R. 1-11-3 per ton, and the acid is got rid of by remelting.—*Balfour in Madras Museum Records; Do., Commercial Products; Eng. Cyc.; Simmonds; Roxb.; Voigt; O'Sh.; Cat. Erhib.*, 1861, 1862; *Powell; Low's Sarawak; Indian Field; Madras Ex. Jur. Rep. by Drs. Cleghorn, Scott, and Hunter, and Lt. H. P. Hawkes; Smith's Chin. Mat. Med.; Mr. E. Loarer on Vegetable Wax.*

OIL PAPER, the Yu-chi of the Chinese, is made all over China, by brushing over paper with castor-oil or some other drying oil. It is a very useful waterproof paper, answers all the purposes of oiled silk, and is so cheap that it may be freely used and frequently changed,—no small matter in the treatment of wounds in a warm climate.

OIMA, in Persia, an overcoat used chiefly when on horseback. It resembles a lady's riding habit, fitting tight to the body from the neck to the waist, where it is gathered into plaits or folds, and swells out above the girdle, falling in ample folds to the feet. It is generally made of broad-cloth.

OITR, a lake in Japan, formed in one night, B.C. 280, by the subsiding of the ground.—*Buist.*

OJHA, a snake-catcher. Entrails of birds used by the Munda, the Ho, and Bhumij, in divination.—*W.*

OJHYAL, a Gond tribe, wandering bards and fowlers.

OKEKIS, an ancient ruined city, according to Strabo and Pliny, the seaport of the Catabeni or Gelantæ, and long the centre of commerce between Europe and the east. The ruins are situated inside the Straits of Bab-ul-Mandab, about a mile inland, at a place called by the natives Dakuia.

OKI-DON-TAKO. The Japanese have numerous festivals and holidays, held in commemoration of ancestors, deities, warriors, and sages, or from some untraced ancient custom. That at the winter solstice, the Oki-don-tako, or great holiday, lasts fourteen days. It is a period of great rejoicing, all mercantile accounts are, if possible, settled, and much friendly intercourse takes place. The Gokats Seku festival at the summer solstice, about the middle of June, is in commemoration of Gongen Sama, a great general, to whom the present dynasty owes its origin, and the Japanese date their births from it. Banners with koi or carp are hoisted aloft with scarlet streamers.

OKKALA or Okkalega, in Mysore and Coorg, and wherever Canarese is spoken, a cultivator, a farmer or tenant-farmer; sometimes written Wokkalu. In Coorg there were two classes of slaves,—the Wokkalu Jamad-alu, predial slaves attached to the individuals owning them, and sold or mortgaged at pleasure; and a second, the Bhumi Jamad-alu, attached to the revenue lands, and only transferable with the lands. The Okkala of the Canarese people, the Valala of the Tamil race, the Kama, Reddi, Naek or Naidu of the Teling, the Kunbi and Kurmi of Maharashtra, the Khana and Kaibarta of Bengal, and the Jat of N.W. India, are the chief cultivating races.

OLAX SCANDENS. *Roxb.*

Koteke bapana mushte, TEL. | Turka-vopa, . . . TEL. Marike malle, . . . „

A shrub of the Coromandel forests. Olax scandens and O. Zeylanica do not extend, the former beyond Rajmahal, and the latter the Peninsula. O. nana, allied in structure to them, was found by Dr. Hamilton at Gorakhpur, and in large quantities on the banks of the Tons and Jumna, within the mountains, and beyond 31° of northern latitude.—*Roxb. i. p. 163; Royle's Ill.*

OLAY, also Ola. TAM.

Puttay, Tar-ka-patta, HIND. | Neriku, Tat-aku, TAM. TEL.

Palm-leaves prepared for writing on. These are made smooth by being damped and then repeatedly drawn between two blocks of wood. The dried raw leaves are called Karak ola, and the finest prepared leaves, Pusk ola; but Ola or Olay is the Tamil vernacular name by which the people designate the leaves, when prepared for being written upon. These are prepared from the leaves of the palmyra (*Borassus flabelliformis*), the cocoanut tree, and the Talipot palm (*Corypha umbraculifera*). The oldest Hindu author who alludes to writing on the Olay is Panini, a grammarian who resided at Arittuwarum, near the source of the Ganges. Pliny says expressly (lib. xiii. cap. 2) that the most ancient way of writing was upon leaves of palma, from which it is believed that the leaf (folium) of a book came to be synonymous with that of a plant. The Olay are written upon with a style, which is pointed with steel, and its handle sometimes highly ornamented. During the operation of writing, the leaf is supported by the left hand, and the letters are cut or scratched upon its

surface with the style, which is kept always in the same position, and the leaf is moved to the left hand side by means of the thumb. To render the characters more legible, the engraved lines are occasionally filled by smearing the leaves with fresh cow-dung, which is tinged black by rubbing the lines over with cocoanut oil, or a mixture of oil and charcoal powder; and for the same object, in Ceylon, an oil called Doomale is sometimes rubbed on the letters with a burned rag. All the sacred books of the Hindus, Burmese, Singhalese, etc., are still made of these Olay, some of them being highly ornamented. All accounts in the village revenue department, all grants of land, leases, and all the accounts in shops, are still kept on these leaves, and they are likewise sent as letters. Palm-leaf books are never much beyond two feet in length and two inches in breadth; they are said to last from one to four or five hundred years. In the Peninsula of India, the Olay are prepared from the leaves of the palmyra palm; the panam olay, which are taken while tender, and the flat portions being cut into strips, and freed from the ribs and woody tendons, are boiled and afterwards dried, first in the shade and afterwards in the sun. In Ceylon, Olay are also made from the dried strips of the young leaves of the Talipot palm tree. The palmyra palm ola are called by the Singhalese Karak ola, and applied to the more ordinary purposes. But the still finer description, called Pusk olay, is prepared in the temples by the Samanero priests and novices, who, after damping the Karak ola, draw it tightly over the sharp edge of a board, so as to remove all inequalities, and render it polished and smooth.—*Seeman*.

OLD MAN of the Mountain, the name by which the Crusaders designated a follower of the shiah sectarian, Hasan-us-Sabah. It was a translation of Shaikh-ul-Jabal. Al-Jabal, literally the mountain, was the old Asiatic name for the whole of the very mountainous quarter of Irak-i-Ajam, which lies between Hamadan and Kirmanshah. It stretches far to the S.W. of the Caspian range, and comprises Mount Elwund, the Orontes of the ancients, this branch also bearing the appellation Elburz. A colony of the fanatics, under the leading of one of Hasan-us-Sabah's most odious representatives, settled themselves amongst the heights of Lebanon, and have been variously called Ismailians, Bathenians, and Assassins, and during the crusades, he or one of his successors was known as the Old Man of the Mountain.

OLEACEÆ. *Lindley*. The olive tribe of plants, comprising 12 Indian genera, viz. *Olea*, *Linociera*, *Ligustrum*, *Syringa*, *Pachyderma*, *Myxopyrum*, *Chondrospermum*, *Ornus*, *Jasminum*, *Nyctanthus*, *Osmanthus*, *Schrebera*. Oleaceæ occur in India, the Himalaya and the Khasya mountains, the two Peninsulas, Ceylon, Java, and the Moluccas. In most oil plants the oil is yielded by the seed, but in this tribe the oil is contained in the pericarp.

Jasminum grandiflorum, *Linn.*, all India.
J. revolutum, *Sims.*, Kamaon.
Nyctanthus arbor-tristis, *Linn.*, all India.
Asmanthus fragrans, *Lour.*, Himalaya.
Olea sativa, *Hoff.*, Aleppo, Lebanon.
O. Gardineri, *Thw.*, Ceylon.
O. fragrans, *Thunb.*, Cochinchina, China, Japan.
O. grandiflora, *Wall.*, Nepal.
O. attenuata, *Wall.*, Martaban.
O. clavata, *G. Don.*, China.
O. robusta, *Wall.*, Sylhet.
O. glandulifera, *Wall.*, Dohra, Kamaon, Ceylon.

O. Europea, *Linn.*
O. ferruginea, *Royle*, Sind.
O. dentata, *Wall.*, Burma.
O. Roxburghiana, *Rom. and Sch.*, Circular mountains.
O. dioica, *Roxb.*, Chittagong.
O. acuminata, *Wall.*, Nepal.
O. myrtifolia, *Wall.*, N.E. Bengal.
Linociera dichotoma, *Wall.*, Coromandel.
L. ramiflora, *Wall.*, Moluccas.
L. intermedia, *Wight.*
L. Malabarica, *Wall.*
L. macrophylla, *Wall.*, Sylhet.
L. purpurea, *Vahl.*, Ceylon.
Ligustrum Japonicum, *Thunb.*, Nepal, Japan.
L. compactum, *Hook.*
L. microphyllum, *Bedd.*
L. Nepalense, *Wall.*
L. robustum, *Hook.*
L. vulgare, *Linn.*
L. bracteolatum, *D. Don.*, Nepal.
L. lucidum, *Az.*, China.
Schrebera Swietenoides, *Roxb.*, all India.
Fraxinus Chinensis, *Roxb.*, China.
F. excelsior, *Linn.*
F. floribunda, *Wall.*
F. Moorcroftiana, *Wall.*
Ornus floribunda, *G. Don.*, Nepal.
O. urophylla, *G. Don.*, Khasya.
Syringa Chinensis, *Willd.*, China.
S. Persica, *Linn.*, Persia.
S. emodi, *Wall.*
S. vulgaris, *Linn.*
Pachyderma Javanica, *Bl.*, Java.
Myxopyrum nervosum, *Bl.*, Java.

The olive tree of Europe grows easily in India. *O. glandulifera*, *Wall.*, of the Central Province of Ceylon, grows at from 2000 to 4000 feet elevation, and on the mountains near Dehra Doon and Kamaon. Olive-wood is imported from the Mediterranean countries into Britain. It is veined with dark grey, and resembles boxwood in texture, but is softer. The knotted and curled roots are made into embossed boxes. This is done by means of pressure in engraved moulds of metal. Dr. Wight describes *Olea linocieroides*, polygama, and robusta. The genus *Olea* seems opposed to great extremes of heat or cold, as Dr. Royle had only seen species in sheltered valleys and at moderate elevations in the Himalaya.—*Olea glandulifera* at Suhansudhara and the valley leading to Kuerkuli, as well as near Jurripani, and *Olea ferruginea* in the valleys of the Jumna and Sutlej. *Olea acuminata* extends from Kamaon to Sylhet and Penang. *Olea robusta* is Roxburgh's *Phillyrea robusta*. Dr. Thomson says that near the Chenab, passing some farmhouses surrounded by fields, he entered a scattered wood of wild olive trees (*Olea cuspidata*) mixed with zizyphus and wild pomegranate. On the summit of a pass in the Outer Himalayas, which was not more than 6000 feet, he found a beautiful gentian (*G. kurru* of Royle) and a yellow spinous astragalus.—*Thomson*; *Cleg.*; *Voigt*; *Thw.*; *Royle*; *Gamble*.

OLEA CUSPIDATA. *Thomson*. Olive tree. Kahu, HIND. Grows in the valley of Parbati; varies much in the shape of its leaves, and Dr. Oleghorn says, appears to be *O. Europea*.

OLEA DIOICA. *Roxb.* i. 106. Indian olive.

Burra nuge, . . . CAN. | Atta-jam . . . of SYLHET.
 Karambu, Farjamb, MAHR. | Koli maram, . . . TAM.

This pretty large tree grows in Chittagong, Sylhet, and in Coimbatore, and is common in the forests of Canara and Sunda, on the ghats, but seldom below or inland above. The wood is white, strong, compact, and useful, and might be creosoted with effect. The timber of this tree is

reckoned excellent, and is put to many uses by the inhabitants of Sylhet.—*Wight; Gibson; Voigt.*

OLEA EUROPEA. *Linn.*

O. ferruginea, <i>Royle.</i>	O. cuspidata, <i>Wall.</i>
Zaitun, Zait, AR., PERS.	Wi, Wili, . . . SUTLEJ.
Wili, . . . KANAWAR.	Khwān, . . . TH. IND.
Kau, Kahu, Ko, PANJ.	Ban kau, . . . ,

This tree is a native of the S. of Europe, of Persia, and of many places in the Panjab and valleys of its rivers. It is abundant in Trans-Indus from the plain's level, and in the Salt Range, common in the W. part of the Siwalik tract, and over a considerable part of Hazara (where it is remarkably fine below Tret), and is found on the Chenab, Ravi, and Sutlej, reaching up to 6000 feet on that river. It is found in the hills of the E. Panjab, but is more common in the Salt Range, Hazara, and the valley of the Indus, from 3000 to 5000 feet, along with *Quercus ilex*. It is also found in the Jumna basin to the eastward.

Many varieties of this plant are known in the S. of Europe, two of which have been long distinguished, the wild and the cultivated. The former is an evergreen shrub or low tree, with spiny branches and round twigs; the latter is a taller tree, without spines, and with four-angled twigs. The wild olive is indigenous to Syria, Greece, and Africa, on the lower slopes of Mount Atlas. The cultivated species grows spontaneously in Syria, is easily reared in Spain, Italy, the S. of France, and the Ionian Islands. Wherever it has been tried on the sea-coasts of Australia, the success has been complete. The olive tree is also grown in Hong-Kong, along the coast of Morocco, but particularly to the south; the trees are planted in rows. They take care to water them, the better to preserve the fruit.

Olea Europea has 21 Spanish varieties and 13 French varieties. Its fruit yields olive oil. It is obtained by pressure, but the kernels must not be crushed, as then a disagreeable taste is imparted. European olive trees were imported into the Panjab, in order to test the effect of grafting on the Panjab variety. The olive is of slow growth; trees 80 years of age measure only from 27 to 30 inches in circumference at the lower part of their trunks. The produce in fruit and oil is regulated by the age of the trees, which are frequently little fortunes to their owners. One at Villefranche produced on an average, in good seasons, from 200 to 280 lbs. of oil. The wood is hard, heavy, compact, strong, and close-grained, and is the best for cogs of wheels. It is also used for agricultural implements, cotton-wheels, walking-sticks, in turnery, and for combs. The crooked timbers are largely used for the knees of boats on the Indus near Attock. On the Chenab, at one place Dr. J. L. Stewart found the twigs used for the short suspending rope of the jhula (see Parotia), for which purpose, however, the people said it did not answer well. Elphinstone says that the Sherwani tribe eat the fruit, both fresh and dry; but there is little fleshy pericarp to eat, even were it pleasant to the taste, which it is not.—*Powell; Stewart; Cleghorn; Royle, Ill.; Mat. Medica.*

OLEA FRAGRANS, the Lanhoa or Kwei hwa of the Chinese, is a yellow-blossomed variety, largely cultivated in China, and is one of their most favourite flowers. It forms a good-sized bush, about as large as a lilac, and flowers in the autumn.

There are three or four varieties, the main difference between them consisting in the colour of their blossoms. Those kinds which produce brownish-yellow flowers are the finest, and are most highly esteemed by the natives. The bushes are seen growing near all the villages in the N.E. provinces of the empire, and are plentiful in gardens and nurseries. When they are in flower in the autumnal months, the air in their vicinity is literally loaded with the most delicious perfume. One tree is enough to scent a whole garden. The flowers are a source of great profit to the Chinese cottages, as well as to the nurserymen, who produce them in large quantities for the market, to meet the great demand for them in all the large towns. Ladies are fond of wearing wreaths of them in their hair; they are also dried and placed in ornamental jars, in the same way as rose-leaves are used in Europe; and they are used largely for mixing with the finer kind of tea, in order to give it an agreeable perfume.—*Royle; Roxb.; Williams' Middle Kingdom*, p. 288; *Fortune's Tea Districts*.

OLEA GARDNERI. *Thur.* A tree of the Central Province of Ceylon, growing at an elevation of 5000 to 8000 feet.—*Thur.*

OLEA GLANDULIFERA. *Wall.* A very large tree of the Central Province of Ceylon, growing at an elevation of 2000 to 4000 feet. It is abundant on the northern slopes of the Neilgherries (Ochterlony's valley), elevation 4500 feet, also on the Annamallays, and it is found in Nepal. It is by far the largest of the genus; but Dr. Wight found it in woods about the Avalanchi as a small tree; this was probably owing to the elevation (6000 feet).—*Beddome; Thur. En. Pl. Zeyl.* p. 188.

OLEANDER, *Nerium oleander*, is called also the rose-bay and sponge laurel. It is a native of the warm parts of Europe, of Asia Minor, and the Lower Himalayas; common in gardens all over India. The whole plant is impregnated with a dangerous principle, which has not as yet been insulated. Its activity and volatility are very great; it is even a popular belief that the vapour of the flowers in a close apartment will prove poisonous. Externally the leaves and bark have been used (and sometimes even internally) as a remedy in herpes and itch. The rasped wood is employed as ratsbane. The wood itself is used by some eastern nations as the best material for gunpowder charcoal.—*O'Sh.* p. 445.

OLEARIUS was secretary to the Duke of Holstein's embassy to Russia and Persia in 1633-39.

OLEASTER PLUM, fruit of the *Elaeagnus conferta*, which abounds in parts of the Tenasserim jungles. Its sour red plum makes very good tarts and jellies.—*Mason.*

OLEUM NIGRUM. LAT. Malkungunc, TAM. This oil is a stimulant diaphoretic used in Beri-beri. It is made by putting the seeds of *Celastrus paniculata*, with benzoin, cloves, nutmegs, and mace, into a perforated earthen pot, and then obtaining, by a kind of distillatio per descensum, into another pot below, a black empyreumatic oil.—*Powell.*

OLGANA, a low caste tribe of Gujerat.

OLI. TEL. A marriage portion.

OLIBANUM, Incense.

Kandur, Luban, . . . ARAB.	Weiranah, . . . GER.
Ganda barozā, . . . BENG.	Λιβανος, Λιβανωτες, . . . GR.
Ju-hiang, T'au-ju, CHIN.	Sall-gond, . . . HIND.
Hiun-luh-hiang, . . .	Kundur zachir, . . .
Avul kundur, . . . DUK.	Labuniya, . . . SYRIAC.
Encens, . . . FA.	Paranghi sambrani, TAM.

This was the frankincense used by the ancients in their religious ceremonies. Moses speaks of it in Exodus xxx. 34. There are now three kinds known in commerce,—the African, Arabian, and the E. Indian,—all of which seem to be obtained from species of *Boswellia*. *B. thurifera* grows in N. and Central India, and the existence of this kind, as well as of the Arabian, was known to Dioscorides. In commerce, the Arabian is known as male or tear olibanum, to distinguish it from the E. Indian or stalactitic olibanum. Mr. Vaughan mentions that, from Bandar-Mait, the Luban maiti is imported into the Aden market for sale; from Bandar-Angure, the Luban nankar, or angure; and from the ports of Ras Rooree, Khor Bandar, Alholu, Murya, and Bandar Khassooin in the country of the Wursangali and Mijerthen Somali, about Cape Guardafui. The drug is collected in March, April, and May, and chiefly finds its way to Bombay through the entrepôts of Macula and Shehr.

African olibanum is also imported into Vienna and Marseilles from Suex, and is obtained from Arabia and the E. coast of Africa. It is mentioned by Dr. Pereira as occurring in smaller tears than the Indian variety, yellowish or reddish, and intermixed with crystals of carbonate of lime. One kind of African olibanum is no doubt produced on the hills of the Somali coast westward from Cape Guardafui, and carried to the Arabian coast chiefly by native boats from Macula.

The Arabian olibanum tree grows on the side of the mountains in the Nejd or highlands, and near the Sahila or sea-coast, also between lat. 17° 30' N. and long. 55° 47' E., where the desert ends and the wooded mountain region begins, and is exported from all the ports in the coast line S.W. to the town of Damkote, in the Alkummar bay, in long. 52° 47' E. Good olibanum, as met with in Bombay, is in semitransparent tears, of a light yellow colour, sometimes inclining to white; brittle and adhesive when warm; when burnt the odour is very agreeable; its taste is bitterish, and somewhat pungent and aromatic. Olibanum was used in nearly all the religious ceremonies of antiquity, and now is chiefly employed in fumigations, and in the ceremonies of the Greek and Catholic Churches. It is imported into Bombay from the Persian Gulf. The superior or garbled qualities are re-exported to England and France, and the inferior or refuse kinds to China.

OLIOS TAPROBANUS, a Ceylon spider, very common and conspicuous from the fiery hue of the under surface.—*Tenmant's Ceylon*.

OLIVE.

Zaitun, AR., HIND., PERS.	Bua,	MALEAL.
Oliv, DAN., SW.	Azcitonus,	PORT.
Olijf, DUT.	Maaditshina,	RUS.
Olivein, GER.	Accitunas,	SP.
Oliva, IT.	Keytin,	TURK.
Zet, MALAY.		

The olive tree is noticed under Olea Europea. The fruit is oval, rounded at both ends, about one inch long, smooth, shining green; its sarcocarp fleshy, succulent. Olives, when fresh, have a harsh and extremely bitter taste; and they are edible only after having been steeped for several days in a ley of wood ashes, and then pickled in a strong solution of muriate of soda. They are chiefly valued on account of the oil obtained from them, but are also eaten as an article of dessert.

The kernels or stones of the fruit are elaborately carved in China, and set in gold as brooches and bracelets.—*O'Sh.; Faulkner*. See Olea.

OLIVE OIL.

Huile de olives,	FR.	Minyak zet,	MALAY.
Baumol,	GER.	Oleo das azeitonas,	PORT.
Zaitun ka tel,	HIND.	Aceto de aceitunas,	SP.
Olio d'uliva,	IT.		

Olive oil, from the fruit of the Olea Europea, is largely imported into Britain from Italy, Spain, France, Turkey, the Ionian Islands, Chili, etc. 23,202 tuns were imported in 1870. The fruit is a drupe about the size and colour of a damson. Its fleshy pericarp yields by expression the olive oil of commerce. Spanish or Castile soap is made by mixing olive oil and soda, while soft soap is made by mixing the oil with potash. It is used largely as an aliment; also extensively for soaps, cerates, liniments, plasters. Five gallons of olive, rapeseed, or other oils are used in the preparation of every pack of wool for cloth (independent of the quantity used for soap applicable to the woollen manufactures). In 1882, Great Britain imported 23,190 tuns, value £937,601. Olive oil may be taken as the type of the fatty or fixed, called also expressed, oils. It is of a pale-yellow or of a light yellowish-green colour, without smell when fresh, having a bland, somewhat sweetish, fatty taste. It is very limpid. Olive oil adulterated with other oils is distinguished by not congealing at the same temperature as olive oil, also by retaining air when shaken up more readily than pure olive oil. The oil of the *Sesamum orientale*, of the arachis, and of the poppy are perfect substitutes for the olive oil for medicinal and pharmaceutical uses.

OLLI. TAM. Bars of steely iron, drawn out from the vuttom obtained in clay crucibles.

OLLUCK. TAM. A Madras dry measure, the eighth part of a pud, and the twentieth part of a gallon = 11.719 cubic inches.—*Simmonds' Diet.*

O'M! A mystic monosyllable or ejaculation by Hindus, which is supposed to be uttered in place of naming the Supreme Being. Hindus, from its awful and sacred meaning, hesitate to pronounce his name aloud, and place one of their hands before their mouths and say O'm! A Brahmin beginning or ending a lecture of the Veda (or the recital of any holy strain), must always pronounce to himself the syllable O'm. From various passages in the Asiatic Researches, Mr. Colebrooke and other authorities think it may be collected that A.O.M. or A.U.M. is interpreted to signify Brahma, the Supreme Being, under his three great attributes of the creator, the preserver, and the destroyer, the letters standing in succession for the attributes as they are described. O'm is also supposed to express the words of the Gayatri, a passage in the Veda which is imparted to the youthful Brahman at his initiation into the mysteries of his faith. Its words are, — O'm! Bhurbhuvā ssuvāha, O'm! Tatsa vit'hru varenyāam, B'hargo devasyā dhīmahi dhiyo yonah prachodayath: We meditate on the desirable light of the divine Savitri (the sun), who influences our holy rites. See Gayatri. O'm (A.U.M.) is also imagined to be a monogram of the triad, the initials of Aditi, Varuna, and Mitra.

OMAN is the S.E. region of Arabia, from Ras-ul-Hud on the S. to Zohara or Shargah island on the N.E. It is divided into two principalities,—

Rastag, with Muscat as its capital, and Seer or Julfar, with Ras-ul-Khyma as its chief town. It has from time immemorial been held by two Arab tribes,—the Beni Yemen or Beni Hinavi and the Beni Nasir or Beni Ghafri. Oman was originally peopled from Persia, but the Arab tribe ul-Yesdee, from Nejd, early conquered it. They accepted Islam, and ultimately adopted the Sunni form of religion. The Joasmi are descendants of the Nejd Arabs. Its valleys are occupied by different tribes, each with its own shaikh. The Wahabee Arabs conquered Seer, including Ras-ul-Khyma. The Hinavi and Ghafri are the two Arab tribes who have been most prominent in Oman. The Yarabi and Syndi, to the last of which the family of the present sultans belong, are both branches of the Hinavi. The Joasmi are descended from the Ghafri. Oman, it is said, was colonized four centuries B.C. by the Hinavi tribe, led by Malik bin Fakham, of the province of Nejd. The Ghafri entered Oman after the Hinavi were settled, but the Hinavi continued dominant almost continuously until nearly the close of the 18th century. The tribes and their fighting men are, east and south of Muscat,—

Hurth,	2,000	Jeneba,	10,000
Masakeeah,	4,000	Beni Jaabe, Indahi,	
Beni Boo Hasan, . .	18,000	Sidbi, and Reh-bewi,	10,000
Hajreen,	1,000	Huddabei,	500
Habben,	700	Jennadio,	2,000
Beni Rawhiyah, . .	500	Beni Aamr,	1,200
Beni Kiam, 3,000 to 3,500		Jeal-i-Saad,	15,000
Beni Wahibah, . . .	1,200	Wadi Maawcel tribes, 2,000	
Hiahm,	700	Zalnah tribes,	12,000
Beni Boo Ali, 3,000 to 3,500			

The *Banu Noaimi* tribe could furnish 20,000 effective men; they are mostly shepherds, and live S.W. of Boraimi, with a small number at Ayman, near Shargah.

The *Beni Katab*, within two days of Boraimi, 8000.

Beni Kaab is a branch of the Noaimi, 4000; they dwell in Dhahirah near Obra, one day to the eastward of it.

Durra, 20,000, in Hajar, near Jabal-ul-Akhdar, half a day to the north of this place.

Ali Wahibah, 30,000, 12 miles S. of Rastag.

Beni Mohair, 1000, one day inland, south of Shargah.

Matarish, 500 men, nine miles south of Boo Haile, inland.

OMANDER. SINGH. A variety of Coromandel or Calamander wood of Ceylon.

OMAR, a khalif of the Arab Muhammadans who succeeded Abubakr. On the death of Mahomed, Abubakr was elected as his successor, and after a reign of two years was succeeded by Omar, who was assassinated in the twelfth year of his reign. His khalifat was a period of great extension of Muhammadanism. He sent an expedition into Sind, which was partly overrun. He built Bassora in the 15th year of the Hijra, to secure the trade of Sind, Gujerat, India, Persia, and Arabia. His general, Saad (or, as some say, Abdullah, son of Omar), in A.D. 650 defeated Yazdegerd. Yazdegerd was then on his return from Khorasan, and for the last time put himself at the head of his subjects at Kadesia, was defeated, and an end put to the Persian empire. He imposed the khiraj on Syria. He was assassinated in a mosque at Jerusalem, and his tomb is still shown there. Omar was succeeded by Othman, and then,

in A.D. 656, Ali became khalif. With Ali's rule severe political convulsions ensued. The earliest arose from the intrigues of Ayesha, and after such were settled, the governor of Syria, Moawiyah ibn Abi Sofian, threw off his allegiance to Ali, and had himself proclaimed khalif of the western provinces. An appeal to arms resulted in the defeat of Ali, after a desultory war of 102 days, and Ali then retired to Kuffa in Chaldaea, on the banks of the Euphrates.

OMAR KHAYYAM, a native of Naishapur, in Khorasan, a famous poet, author of Rubaiyat or stanzas. He is said to have been a tent-maker, and Khayyam was his takhallus or literary title.

OMEN. Sagun, Shugun, HIND. Omens are carefully watched for by Hindus. The Tamil people are great slaves to them. Every book hawker carries about works on divination. If a lizard chirp when any undertaking is proposed, this is considered a sufficient reason for its abandonment. They have, however, a proverb, 'The lizard which was the oracle of the whole village, has fallen into the broth.' The following are favourable omens when accidentally met with, viz. fish, curdled milk, full water-pots, the saras (Grus antigone), a pair of Brahmany ducks (Casarca rutilla), doves, etc., and the jay (Garrulus), at the beginning of the rent-collecting season. Unlucky omens are a one-eyed person, an empty water-pot, one of the Kahar race without a load, foxes, hares, crows, jackal to his left hand, or a deer, a cow, or Brahman to his right hand, a dead body. Throbbing of the right eye is an unlucky omen in a female, a lucky one in men.

OMICUND, a Sikh merchant who was conspicuous in the revolution which was crowned by the battle of Plassey.

OMKARA, name of one of the twelve great lingas.—D.

O'M MANE PADMA HAUN is a prayer used by the Mongol, the Tartar, and the Tibetan Buddhists. It is commonly translated by the words,—Oh! the jewel in the lotus; but the literal translation is given in the words,—

O'm,	Mane,	Padma,	Haun,
God,	jewel,	lotus,	that is so.

This invocation is quite unknown to the Buddhists of Ceylon or the Eastern Peninsula, and forms the peculiar feature of Tibetan Buddhism. M. Klaproth translates from Mongolian into French a legend that the savage Empire of Snow (Tibet) had for ages been lying beyond the pale of law and religion,—rempli d'une foule d'êtres malfaisans,—when, by an intellectual creative act of the great Sakya Muni (Buddha), a certain divinity named Padma-pani was called into being from the flower of the lotus, who successfully undertook the work of conversion. The notion is, therefore, that the mystic words are commemorative of this great act of Sakya Muni, and of the incarnation of the divine Tibetan apostle. It is an invocation of Sakya, who is usually represented holding a lotus flower with a jewel in it. At Tumlong, in an oratory, the lotus, the mane, and the chirk (or wheel) with three rays, emblematic of the Buddhist Trinity, are everywhere introduced. 'O'm mane padma.haun' in gilt letters adorn the projecting end of every beam; and the Chinese cloud messenger, or winged dragon, floats in azure and gold along the capitals and beams, amongst scrolls and groups of flowers. At one end is a sitting figure of Gorakhnath in Lama robes, surrounded

by a glory, with mitre and beads. A mythical animal with a dog's head and blood-red spot over the forehead is not uncommon in this chapel, and is also seen in the Sikkim temples and throughout Tibet. Ermann, in his *Siberian Travels*, mentions it as occurring in the Khampa Lama's temple at Maimaochin; he conjectures it to have been the Cyclops of the Greeks, which, according to the Homeric myth, had a mark on the forehead, instead of an eye. Captain Knight, in the monastery of Hemis, found about a hundred praying wheels,—little wooden drums covered with leather, fitting into niches in the wall, and moved at the slightest push by a spindle running through the centre; and as the scrolls inside them are covered with the mystic sentence, 'O'm mane padma haun,' and contain nothing else, it was calculated that the invocation must occur not less than 1,700,000 times. These sacred words are not only found in the praying wheels, but long mounds of votive stones, similarly inscribed, are scattered far and wide over the face of the country. This habit of promulgating the doctrines of their faith by inscriptions patent on the face of religious edifices, stones, etc., is peculiar to the Buddhists of Tibet. Their constant repetition is also, as M. Hue has explained, extremely meritorious, and capable of securing immediate absorption after death into the universal soul of Buddha.

OMMASTREPHEs, a genus of cuttle-fishes belonging to the family Teuthidæ. The cuttle-fishes of this genus closely resemble those belonging to Loligo; they may generally be distinguished by the short rhomboidal termination of the body formed by the fins, combined with the hinder extremity.

OM-NAMO-NARAYANA, the principal mantra of the Vaishnava Hindu sect.

OMOPHAGIA (ὀμοφαγία), or eating raw flesh with the blood, was a part of the secret mysteries of Osiris, in commemoration of the happy change in the condition of mankind from savage to civilised life, and intended to deter by disgust the return thereto.

ONAGER, the wild ass of Cutch.

Equus hemionus of India. | *Asinus Indicus*, *Sclater*.

Ghor-khar, Koulun, HIND. | Ghour, PERS.

The Onager is supposed by authors to be distinct from the kiang or wild ass of Tibet, the *Equus hemionus* of Pallas. It is of a pale isabella or sandy colour above, frequently a dark short cross stripe on the shoulders, sometimes two, and limbs barred more or less distinctly. It is found sparingly in Cutch, Gujerat, Jeysulmir, and Bikanir, not south of Deesa nor east of lat. 75° E., long. 75° E. It also occurs in Sind and west of the Indus, in Baluchistan, Persia, and Turkestan, also in the Pat, west of the Indus. They foal in June, July, and August. They are shy, have great speed, but have been run down by a horseman. The voice is a shrieking bray.—*Jer*.

ONAM, a four days' festival amongst the Nairs of Cochin, held about the middle of August, in which the Nair women go from street to street singing songs, and the men join in athletic sports.

ONDATRA AMERICANA. *Tiedemann*. The musk rat or mus-quash; the tail is imported from America into India, and used as an aphrodisiac.

ONESICRITUS of Egina went with the army of Alexander, but advanced farther east than the

army, and acquired some knowledge of the Malabar coast and Ceylon. He was the first to mention Taprobane. He was the companion of Megasthenes.

ONG-DES, Ang-des, or On-des adjoins Tibet. The inhabitants call themselves Hungia, and appear to be the Hong-niu of the Chinese authors, the Hun (Hoon) of Europe and India.—*Tod*.

ONG-KHAN, or Aung-khan, prince of Kerait, was the first adversary of any importance overcome by Chengiz. He was defeated in the year 599 (1202), and his fall was followed by the speedy overthrow of the Oyurat, the Kungrat, and the Naiman, scattered Turkish tribes living westwards of the Mongols, and in closer proximity to Buddhist, Christian, and Muhammadan influences, to which they owed a higher degree of general culture probably than the Mongols had attained to, although their military capacities were far inferior to those of the troops trained by Chengiz under a discipline of draconian severity.—*Vamberg, Bokhara*, p. 120.

ONION, *Allium cepa*.

Bual,	AKAB.	Cipolla,	It.
Bawung,	BALI.	Bav'angmira, . . .	MALAY.
Kembally,	CAN.	Bawung, Bambrang, .	"
T'aung,	CHIN.	Cebola,	PORT.
Log,	DAN.	Luk,	RUS.
Uije, Ajuin,	DUT.	Luno,	SINGH.
Oignon,	FR.	Cebolla,	SP.
Zwiebel,	GER.	Lok,	SW.
αποφαγία,	GR.	Venggayum,	TAM.
Khanda,	GUJ.	Wulligadda,	TEL.
Piaz,	HIND., PERS.	Soghana,	TURK.

The onion is the betzulim of Numbers xi. 5. It is a common vegetable all over India, and is sown broadcast, at almost all seasons of the year. When about six inches high it is pricked out into beds six fingers' breadth apart; and the plants go to seed without difficulty. It is a favourite pot vegetable of most natives of India, and is a constant ingredient in all their curries, pullaos, etc. With the Brahman, however, and those sects of Hindus generally who abstain from animal food, the onion is not eaten, from a fancy that its structure resembles that of flesh. Onion juice is reluctantly taken when prescribed medicinally, as a powerful stimulant, by those who would reject spirituous liquors. With the Chinese, every part of the onion plant is reckoned to have some special therapeutic property. The bulb is one of their favourite articles of diet; it is rich in nitrogenous compounds.—*Faulkner; Riddell; Ainslie; Mason; Smith*.

ONKAK, HIND., of Kashmir, a bird which supplies feathers for the helmet plume, or kalgi. The lengthened scapular feathers of the *Plotus melanogaster* are looked on as a badge of royalty by the Khassya, and they are esteemed by all. They were the badge of one of the cavalry regiments of Bengal.

ONOSMA ECHIOIDES. A plant of Kaghan and Kangra, used principally for its colouring matter as a substitute for the alkanet, *Anchusa tinctoria*, to colour liquids, particularly Rowland's Macassar oil.—*Powell*.

Onosma emodi, Maha-ranga, HIND., has lanceolate triple-nerved leaves. The root is branched, of a dark-purple colour, and is used in dyeing. It is a native of Nepal, in Gosainthan; grows plentifully on the Himalaya, on the Hindu Kush, near the Panjab road, via Peshawar to Kashmir. It is official in Kashmir, where its flower-stem

and root are both of them deemed useful in medicine.—*Eng. Cyc.*; *Honigberger*.

Onosma macrocephala, *O. bracteatum*, *Royle*.
Lisan-ul-azar, . . . ARAB. Gao-zaban, . . . HIND.

Its rough leaves resemble a cow's tongue, hence the name; but the term Gao-zaban, or cow's tongue, is often applied to a species of *Cacalia* (*C. Kleinii*), a composite plant. At the Lahore Exhibition, the flowers which accompanied two specimens clearly belonged to a plant of the natural order *Boraginaceæ*.—*Powell*; *Hogg*.

ONYX.

Onix, Onice, . . . FR. Sang-i-Sulimani, . . . PERS.
Sulimani pat'har, HIND. Oniks, . . . RUS.
Onice, . . . IT. Onique, Oniz, . . . SP.
Pa'mata unam, MALAY. Onix, . . . SW.

The onyx-stone is mentioned in Genesis ii. 12, but the term is said to have been applied also to the shell of a mollusc. This stone is a succession of plates of chalcedony. It is found in great abundance in the great greenstone tract of the Dekhan, and at Rajpili in Gujerat, along with other chalcedonic and quartzose minerals. The silicious particles are arranged in alternating horizontal layers of opaque, white, and translucent blue, grey, or brown, and because these have a resemblance to the marks on the human nail, the stone was called from the Greek word for nail, *onyx*. It was known to the ancients, and was employed by them, as it is now, for the manufacture of cameos, the figure being cut out of the opaque white, the dark part forming the ground, or the contrary. It is most valuable when the contrast of colours is strong, and when the layer is thick enough to give a high relief to the object to be engraved. In the royal library at Paris there is an antique cameo cut out of an onyx with four layers, representing the apotheosis of Augustus, eleven inches by nine, which is supposed to be the finest in existence. Agates with an onyx structure are not uncommon, particularly among chalcedonies, but the finest are obtained in India. Cameos sold at Rome are made from a thick shell, having different-coloured layers. The onyx-stone is stained black by being boiled in honey, oil, or sugared water, and then in sulphuric acid. For red, protosulphate of iron is added; and for blue, yellow prussiate of potash is added to the protosulphate of iron. The onyx has a peculiar and almost superstitious value in the east, and is especially chosen for amulets. Chaplets of this stone are much esteemed. Colonel Tod had a vase, purchased in Sindia's camp, evidently of Grecian workmanship; and the numerous cameos of the onyx found in the Panjab, and other relics of Alexander's conquests, attest their abundance at times. In such numbers were these cameos found in 1803-4, when Lord Lake dictated peace to Holkar from the altars of Alexander, that the native artists of Muttra and Agra carried on a successful imitation of them for some time, which encouragement might have raised to celebrity.—*Eng. Cyc.*; *Emmanuel*; *Tod's Travels*.

OOLOK. HIND. A boat on the Ganges.

OOMIAH, the creative power of Hindu mythology.

OOMRAOTI, a name given to several towns in the Peninsula of India, also written Omrooti, Umraoti, and Amravati. The Oomrawatte of Berar is one of the largest cotton marts; another Omraoti near Masulipatam is famed for its Buddhist ruins.

OOMUR, or Oomra and Soomra, are races of Sindh from the Pramara or Puar races of Rajputa, and found now chiefly as Muhammadans, though a few, still called Oomra and Somra, are to be found in Jeysumir and in the thul or great desert.

OONAO, a town in the Lucknow division of the N.W. Provinces of India, in lat. 26° 33' N., and long. 80° 33' E.; 8 miles from Cawnpur.

OONT. HIND. Camel. Oont-ka-bal, camel's hair. Oont shah, a Maharram fakir. Oontia-bag, a lion.

OOSAKA, the greatest commercial city of Japan, built at the mouth of a small river at the N.E. extremity of the inland sea. It is the seaport of Miako or Kioto, from which it is distant 26 miles.

OOSUR. HIND. Properly soil free from the saline efflorescence called reh, but underlaid at a depth of six to twelve inches by a stratum, more or less continuous, sometimes of considerable thickness, of kankar, sometimes in the form of a block (known as silia), and at other times in strings and nodules. Reh is a general term for all saline efflorescences. Sometimes it is an impure sulphate or carbonate of soda, sometimes chloride of sodium, and sometimes carbonate or nitrate of potash, but generally more or less a mixture of all. It rises to the surface by capillary attraction. It has occurred to a large extent on the lands along the banks of the Ganges canal, and has greatly injured the soil. See Reh.

OO-TARA and Thau-na, Buddhist missionaries sent, after the third convocation at Pataliputra (B.C. 308), to preach Buddhism to the Talaing in the reign of Asoka.

OOTATOOR and Verdachellum, near Trichinopoly, have limestone rocks containing numerous fossils, the limits of which are supposed to be near Trichinopoly on the south, and near Pondicherry on the north. Professor Forbes arrived at the conclusion that all the beds from which fossils had been obtained were parts or members of one and the same series, and equivalent to the cretaceous series of Europe; the deposits at Trichinopoly and Verdachellum being probably equivalent to the upper greensand and gault divisions of that series, the deposit near Pondicherry being equivalent to the neocomian or lower greensand.

OPAL. This delicate iridescent gem has been known by the name it now bears from the time of Pliny. There is in it the gentler fire of the ruby, the brilliant purple of the amethyst, and the sea-green of the emerald, all shining together. This is produced by the reflection and the refraction of light in certain openings of the mass. Opal seems to have been first brought from the Indus, but Arabia and Ceylon have been named; Saxony, Hungary, Ireland, Iceland, Scotland, and Mexico are now known to yield it. The best oriental opal is from Hungary. Fire opal, in particular, comes from Mexico. In Hungary, its most celebrated locality is the village of Tchervenitz in the trachytic range, extending between Tokaj and Eperies. These mines have been wrought for many ages. The fire opal, of a beautiful topaz-yellow colour, with great lustre, is not obtainable in large masses.

Precious opal is the most beautiful of all gems. Its price depends on the play of colours displayed. The *hydropneum* loses its beauty when

exposed to water. Opal generally contains a little oxide of iron, and a small quantity of the alkaline earths. *Precious opal* scratches glass, but is easily broken, on account of the numerous fissures by which it is traversed, and which probably give rise to the play of colours. Opals are cut with rounded faces. *Common opal*, or *semi-opal*, has not the hardness of opal, and is easily scratched by glass, which distinguishes it from silicious stones; it is called semi-opal. *Opal jasper* resembles jasper, but contains iron, and is not so hard. Hungarian opals are the more valuable and harder; they present a uniform milkiness of surface, more or less iridescent. The Mexican opals, when recent, present an unnixed globule of green fire, but they become colourless or of an opaque brown if wetted. The opal is only cut in cabuchon. The opal of Nonius, which Mark Antony proscribed, was valued at £20,000 of British money. According to Pliny, India was the source of opal. Common opal occurs in the volcanic rocks of the Dekhan.—*Jam. Ed. Jour.; King; Tavernier's Tr.; Eng. Cyc.; Tomlinson.*

OPERCULUM is the plate which protects the apertures or exposed parts of certain molluscs. In many of the testaceous gastropods it fits the aperture of the shell more or less accurately when the animal has retired within it. Opercula are sometimes horny, as in trochus and nuxes; sometimes shelly, nay almost stony, as in turbo.

OPH, HEB., a serpent, was pronounced Ope, Oupis, Opis, Ops; in the Egyptian, Ob or Aub; and by Cicero, Upis. The oph was an emblem of the sun, also of time and eternity. The basilisk, or royal serpent, was named Oubaos. The idolatry of the serpent was alluded to in Leviticus xx. 27, Deuteronomy xviii. 11. See Ophis.

OPHELIA ALATA. Griseb.

O. angustifolia, Don.

Swertia, sp., Wallich.

O. chirata, Griseb.

Kash-ul-zarita, ARAB. Harun-tutiya, HIND.

Chiretta, Hatmul, HIND.

Bui . . . of KANGRA.

The Ophelia genus of slender plants belongs to the order Gentianaceae. Dr. Wight gives Ophelia corymbosa, alata, angustifolia, chirata, elatior, elegans, Grisebachiana, and minor. They grow at moderate heights in the Panjab Himalaya, several of them being exported to the plains for use in medicine under the name of chirata, which has undoubtedly tonic properties, and is largely used by natives and Europeans.—*Wight; Stewart.*

OPHELIA ANGUSTIFOLIA. Don.

Swertia angustifolia, Wall.

Kash-ul-zarita, ARAB. Hatmul, HIND.

Pahari chiretta, HIND.

Chiretta, . . .

Harun-tutiya, . . .

Bui . . . of KANGRA.

This species has long been used as a bitter tonic. It is called Pahari chiretta in the hills, and is substituted for the true kind.—*Ind. An. No. 6; O'SA. p. 460.*

OPHELIA CHIRATA. Griseb. Chiretta.

Agathotes chirata, D. Don.

Hab-ul-mul, ARAB. Kirata-tieta, SANSK.

Kash-ul-zarirch, . . .

Dowa-i-peehish, PERS.

Shayraat-koochie, TAM.

Shilassuttoo coello, TEL.

Chiretta or chirata is employed throughout Southern Asia as gentian in Europe. It has long been known to the Hindus. This plant is an annual of from 2 to 3 feet high, with a single, straight, round, smooth stem. Grows in

the Himalaya mountains, and is met with in a dried state, tied up in bundles, with its long slender stems of a brownish colour, having the roots attached, and which have been taken up when the plant was in flower. The whole plant is bitter. Mr. Brattley states that it contains a free acid, a very bitter extractive and resinous matter, and much gum, muriates and sulphates of lime and potash; also, that the spirituous extract is more aromatic than that of Gentiana lutea, but that the extractive and the gum are in larger proportion in the latter. Water and spirit take up its active properties. It is a bitter tonic; stomachic, used in dyspepsia or as a tonic in convalescence, either cold or hot infusion; the former is lighter, and well suited to dyspeptics, and not so apt to create nausea in a hot climate. Sometimes a little orange-peel or cardamom is added. A tincture is made like that of gentian with proof spirit; like other bitters, it is best taken half an hour before meals. It acts as a simple bitter tonic, not aromatic nor astringent, and is the best substitute for gentian and quassia. It is used in fever, debility, and dyspepsia. The root is the bitterest part of the plant, and the bitter principle is easily imparted to water or alcohol. It is found to be a very efficacious remedy in India against intermittents, particularly when associated with Guilandina bonduc or Caranga nuts.—*Royle's Ill. Bot.; Wall. Pl. As. Rar.; Powell; Indian Ann. of Med. Sc.*

OPHELIA ELEGANS. Roxb.; Wight, Ic.

Salaras, Silajitu, TEL. Grows plentifully in several parts of the Madras Presidency, flowering August and September; and a very handsome species when in full flower, forming as it does a rich panicle of light blue flowers streaked with deeper coloured veins. Grows plentifully in the Pulney Hills, in the Jeypore zamindari of Vizagapatam, and is largely exported as salaras or silajit, the amount being valued at about Rs. 2500 a year. It is preferred by the hakims or native practitioners to the Himalayan chiretta, and is considered a febrifuge. The samples of the drug, seen as exported in bundles, are about 16 inches long and 4 inches deep, and are always tied up with the tough bark and large leaves of Bauhinia Vahlia (W. & A.), which abounds in the Northern Circars. The drug is exceedingly cheap; the amount exported is considerable, and is confounded in the bazars with chiretta. Several plants closely allied to the chiretta are used for the same purposes. Ophelia angustifolia, Don, in Northern India is called Pahari (i.e. hill) chiretta, to distinguish it from the true or Dakhani (southern) chiretta, also O. multiflora, Dalzell. Justicia paniculata, likewise, is one of the chiretta plants. Exacum tetragonum is called Ooda (that is, purple) chiretta. The cold infusion of Exacum bicolor, although a pure bitter, is much milder than that of Ophelia elegans, which possesses a powerful bitterness, remaining for several minutes in the mouth. It exercises a tonic influence on the digestive organs, thereby improving the general health, while it appears also to have a febrifuge property. Ophelia alata and O. chirata seem to be used similarly; they grow in the Himalaya. O. paniculata, O. purpurascens, and O. speciosa are all known as chiretta or cherata; they are found in the Sutlej valley, between Rampur and Sunnam, at an elevation of 7000 to 9000 feet. These annual

OPHIDIA.

plants supply the chief portion of the bitter root exported to the plains.—*Cleghorn's Panj. Rep.; Ind. Ann. of Med. Sc.; Cleghorn in M. E. J. R.*

OPHIDIA, in natural history, the order of snakes. It comprises seventeen families in two sub-orders, innocuous snakes and poisonous snakes. See Reptiles.

OPHIOCEPHALIDÆ, a family of fishes, comprising 25 species of *Ophiocephalus* and one of *Chanua*. The walking or snake-headed fishes, the *Ophiocephalidæ* of India, and other amphibious genera, are perhaps the best known of monogamous fishes; some of them reside in ponds, others prefer rivers, where they take up their residence in deserted crab holes, which they find in the banks. The pond species delight in lying at the grassy margins, where the water is not deep enough to cover them; and here they are able to respire atmospheric air direct. The striped walking fish constructs a nest with its tail among the vegetation, and bites off the ends of the water weeds; here the ova are deposited, the male keeping guard; but should he be killed or captured, the vacant post is filled by his partner. The hissar, *Callichthys*, of S. America, is likewise monogamous, constructing nests, which it also defends.

O. amphibius occurs in the fresh waters of Burma, but the natives regard them with superstitious awe, and do not eat them. They have a legend that they were formerly men, changed into fish for their sins; and the Pwo Karen of Tavoy say that if people eat them they will be transformed into lions. Frogs do some mischief among the fry,—*Hylorana Malabarica*, *Hylorana florescens*, *Rana cyanophlyctis* (*Schn.*), and an unnamed species of *Polypedates*,—but they have themselves enough of enemies. In the water, the murrel, a species of *Ophiocephalus*, feeds almost entirely upon them, generally lying close under the banks for this purpose; and on land, mungoses, snakes, kites, crows, and paddy-birds assist in suppressing them, while water-snakes follow them in both elements. The most troublesome is the common brown frog, *Rana cyanophlyctis*.

Ophiocephalus striatus, *Bloch*.

Murrel, ENG. | Karupu veraul, . . . TAM.

This, along with other species of murrel, is found on the Neilgherry Hills. Fish travel, not eels alone, which in all countries can move rapidly over moist land. Theophrastus (*De Piscibus*), the contemporary of Aristotle, mentions fishes found in the Euphrates, which in the dry seasons leave the vacant channels and crawl over the ground in search of water, moving along by fins and tail. The *Ophiocephalus* amphibious of Burma travels over land. The *O. striatus*, which occurs in the Indian Peninsula, attains a length of upwards of 3 feet; *O. gachua*, to 1 foot long; and Dr. Day discovered that they breathe air direct from the atmosphere. Hartwig mentions that in several fish the gills communicate with a cellular labyrinth containing water, which keeps the gills moist; by this means the hissar of Guiana, the frog-fish of Ceylon, and the *Anabas scandens*, a climbing perch of India, are able to remain out of the water. The hissar throws itself forward by springs of its tail, and can move in that way nearly as fast as a man can leisurely walk. The pectoral fins of the frog-fish, supported by the bones of its carpus, perform the office of

OPHIOXYLON SERPENTINUM.

feet. The climbing perch moves itself up trees by means of its ventral fins.

Ophiocephalus vagus, as the waters retire, burrow into the soft mud. A species of *Ophichthys*, and *Ospromenus olfax* of Batavia, also travel.—*Hartwig*.

OPHIOGLOSSACEÆ. *Tindley*. A natural order of acrogenous plants, from two Greek words, *Ophis*, a snake, and *Glossa*, a tongue.

Ophioglossum reticulatum, *Linn.*, Bengal, Mauritius, Jamaica.

O. filiforme, *Roxb.*, Bengal, Peninsula of India.

O. pendulum, *Linn.*, Mauritius, Khasia, Moluccas.

Helminthostachys flacinita, Bengal, Peninsula of India, Moluccas.

They are of little or no use.

OPHIOPOGON JAPONICUS. *Smith*. *Mehmen-tung*, CHIN. A liliaceous plant growing in Hankow, Yu-hau-hien, and Hang-chu-fu, in the Che-kiang province. Its tubers, as seen in the market, are shrivelled, pale yellow, soft, and flexible, from 1 to 1½ inch long.—*Smith*.

OPHIORHIZA MUNGOS. *Linn.*

Kajo mar, JAV. | Mendi, SINGH.
Naga suganda, SANSK. | Nakuli, Sarpakshi, TEL.

A native of Ceylon, Java, and Sumatra; all parts are intensely bitter; it has high reputation as a remedy for snake-bites. Roxburgh altogether discredited its supposed virtues. The *ichneumon* plant is supposed to furnish the mungoose with an antidote when bitten in a conflict with a snake. The Singalese use it in cases of snake-bites; the leaves and bark are made into decoction, and given in doses of half an ounce. Dr. Wight in *Icones* gives *Ophiorhiza cernantha*, *grandiflora*, *Harrisonii*, *Roxburghiana*, and *Roxburgh* adds *O. villosa*. The Arabs appear to be ignorant of the virtues of the *Ophiorhiza*, but they value highly the *Aristolochia sempervirens*, which they consider not only as a remedy, but as a preservative too, against the bite of serpents.—*Roxb. i. p. 701; O'Sa. p. 400; Niebuhr's Tr. ii. 348; Ainslie*.

OPHIOXYLON, from *ὄφις*, a serpent, and *ξύλον*, wood, because it has a twisted root and stems; a genus of plants belonging to the natural order Apocynaceæ. Wight gives *O. Belgaumense*, *Ceylanicum*, *macrocarpum*. *O. majus*, *Wall.*, is a shrub of Burma.

OPHIOXYLON DENSIFLORUM. *Thw.*

O. Ceylanicum, *W. Ic.* | *Tabernaemontana densiflora*, *Wall.*
O. Neilgherrense, *W. Ic.*

A native of the central province of Ceylon, up to an elevation of 6000 feet.—*Thw.*

OPHIOXYLON SERPENTINUM. *Linn.*

Chandra, BENG. | Chandraka, SANSK.
Chota chand, HIND. | Aika-waireya, SINGH.
Jovana amelapodi, MALEAL. | Chivan melapodi, TAM.
Chivan amelapodi, Patala gandhi, TEL.
Soovana-umel-podi, Patala garuda,

A climbing or twining plant of Ceylon and of British India. The E. Archipelago *Ophioxylon serpentinum*, *O. mungus*, *Aristolochia Indica*, and *Mimosa octandra* are popularly said to be the plants to which the mungoose resorts in its attacks with snakes. In rich soil it becomes a climbing plant, but in poor soil it is a small, erect shrub. The root is used as a bitter tonic and febrifuge, as an antidote to snake-poison, and to promote delivery in tedious cases. On the Malabar coast, the root in cases of snake-bites and scorpion stings is prescribed in decoction, to the

extent of a pint in the twenty-four hours, and the powder is applied externally to the injured part.

OPHIR. Gold is often mentioned in the Hebrew Scriptures as an article of commerce. In 1 Kings ix. 26, about 1000 B.C., Solomon king of all Israel 'made a navy of ships in Ezion-geber, which is beside Eloth, on the shore of the Red Sea, in the land of Edom.' And these ships brought gold, silver, and precious stones from Ophir and Tharshish in such quantities, that king Solomon 'exceeded all the kings of the earth for riches.' Silver was so plentiful at his court that it was 'accounted nothing of.' The king's drinking cups were made of pure gold, and his shields were covered with beaten gold. It has never, however, been settled where Ophir and Tharshish were situated; but we are distinctly told that the navy of Tharshish brought 'gold and silver, ivory, and apes, and peacocks,' and Ophir has been supposed to have been some district or port in the Red Sea, on the east coast of Africa, the Malabar coast, and the coast of Malacca. Some Portuguese historians have supposed that it was Sofala, or some other place near the mouths of the Zambezi, on the east coast of Africa. The Tharshish fleet is said to have arrived at Ezion-geber only once every three years, from which it may fairly be inferred that the voyage was a considerable one, or that the ships had to go with the S.W. monsoon and return with the N.E. winds, or that they made a trafficking voyage from one place to another until the cargo was sold and another shipped. Ships or boats coasting from the Red Sea to the mouths of the Zambesi would not take three years for such a voyage. Solomon's navigators seem to have crossed the open seas and traded with India. Ezion-geber, on the shores of the Red Sea (1 Kings ix. 26), is a little port at the head of the Elamitic or Eastern Gulf of the Red Sea. This town more naturally belonged to the Midianites of Sinai, or rather to their friends the Egyptians. It was afterwards called Berenice by the Ptolemies; and its place is still pointed out by the Egyptian name of the valley in which it stood as Wady Tabe, the valley of the city, and is no doubt the town known seven centuries later under the name of the Golden Berenice, and not many miles from the modern Souakin. Solomon's ships brought home gold from Ophir, and precious stones and ebony. There are at present in Further India two places called Mount Ophir,—one of them in Sumatra in Palimbangan district, 9770 feet above the sea, to which the name was given by the Portuguese; and they gave the same name to Gunung Ladang, a mountain 40 miles N. of the town of Malacca, 4000 feet high. In the vicinity of both of them gold has been obtained. Josephus expressly says that the Aurea Chersonesus was the Ophir of Solomon's time. Malacca, as is thought, is the eastern extremity of what was known as Ophir to the ancient Hebrews, or Sophir to the authors of the Septuagint version, whither the fleets of Hiram and Solomon voyaged on their trading expeditions. 'Once in three years came the navy of Tharshish, bringing gold and silver, ivory, and apes, and peacocks.'

Professor Max Müller believes Ophir to be India, and he supports his opinion by a reference to the ancient names for the articles imported by Solomon, which are Sanskrit. The nature and direction of the winds blowing in those quarters

would allow of a voyage from the head of the Red Sea to India, stopping at several places on the way, being accomplished by the rude vessels and cautious sailing of those days in a period of from eighteen months to two years. (See 1 Kings ix. 28, x. 11, 22; 2 Chronicles ix. 10, 21.) In Bochart's *Geog. Sacr.* (Phaleg) lib. ii. c. 27, he affirms that every circumstance required to constitute the Ophir of Hebrew Scripture may be found in the classical Taprobane, the modern Ceylon: 'Quia Taprobane insulæ (quam Zeilan esse alibi probabo), omnia ad amussim quadrant quæ de Ophira legere est in libris Regum et Paralipomenon. Ibi enim aurum et ebur, gemmasque et margaritas magna copia nasci nemo est qui nesciat. Scatere etiam pavonibus, scribit steucius in Arrianum. Et in Chersoneso proxima magni pretii cercopithecos memorat Ludovicus Vartamanus.' In the second part of his sacred geography or 'Chanaan' (lib. i. c. 46), he collects diagrammatically the proofs offered in support of his opinion by classical writers, and modern geographers, travellers, and others. Sir Emerson Tennant has suggested that the Port of Galle may be the Tharshish of the Bible, 'which lay in the track between the Arabian Gulf and Ophir,' and that Ophir itself is Malacca, or the Aurea Chersonesus. Sir Emerson has stated that the names of the articles brought by the fleet are 'identical with the Tamil names by which some of them are called in Ceylon to the present day: Senhabin, or teeth of elephants, Kophim, or apes, and Tukum, or pea-fowls. But these are the pure Sanskrit words Ibha, Kapi, and Sukā, with the mere addition of the Hebrew plural termination. Sanskrit names in the south of India have not displaced the original Tamil appellations, which still remain the terms in common use, namely, Yana for elephant, Kurangu for monkey, Myle for peacock, and Kilip-pullai for parrot. Sofir is the Coptic name of India at the present day; but the name must have applied originally to that part or parts of the Indian coast frequented by the merchants of the west. In the Septuagint translation of the Bible the Hebrew Ophir is always rendered by Sophir. The earliest mention of the name is in the book of Job, where the 'gold of Ophir' is referred to as of the finest quality. At a later date, the ships of Hiram king of Tyre 'went with the servants of Solomon to Ophir, and took thence 450 talents of gold, and brought them to king Solomon.' The gold of Ophir is referred to by Isaiah, who says, 'I will make a man more precious than gold, even a man than the golden wedge of Ophir.' The word here translated 'wedge' means a tongue or ingot; and General Cunningham suggests that the wedge of gold of 50 shekels weight that was concealed by Achan was one of the ingots of Ophir. At the present day the Aravalli range is the only part of India in which silver is found in any quantity, while the beds of many rivers still produce gold.—*Sharpe's Egypt; Bickmore; Ouseley's Tr.; Cunningham's India; Tennant's Ceylon.*

OPIAN, called Hupian by Baber, is supposed by General Cunningham to be Alexandria apud Caucasum. According to Pliny, the city of Alexandria, in Opianum, was situated at 50 Roman miles, or 45·96 English miles, from Ortospona, and at 287 Roman miles, or 217·8 English miles, from Peucolaitis or Pukkalaoti, which was a few

miles to the north of Peshawur. Ortospana has been identified by General Cunningham with the ancient city of Kabul and its citadel the Bala Hissar. Pliny further describes Alexandria as being situated sub ipso Caucaso, at the very foot of Caucasus, which agrees exactly with the position of Opian, at the northern end of the plain of Koh-i-daman or hill-foot. The place was chosen by Alexander on account of its favourable site at the triodon, or parting of the 'three roads' leading to Bactria. These roads, which still remain unchanged, all separate at Opian, near Begram,—the N.E. road, by the Panjsher valley, and over the Khawak pass to Anderab; the west road, by the Kushan valley, and over the Hindu Kush pass to Ghor; the S.W. road, up the Ghorband valley, and over the Hajiyak pass to Bamian.

The first of these roads was followed by Alexander on his march into Bactriana from the territory of the Paropamisadae. It was also taken by Timur on his invasion of India; and it was crossed by Lieutenant Wood on his return from the sources of the Oxus. The second road must have been followed by Alexander on his return from Bactriana, as Strabo specially mentions that he took 'over the same mountains another and shorter road' than that by which he had advanced. It is certain that his return could not have been by the Bamian route, as that is the longest route of all; besides which, it turns the Hindu Kush, and does not cross it, as Alexander is stated to have done. This route was attempted by Dr. Lord and Lieutenant Wood late in the year, but they were driven back by the snow. The third road is the easiest and most frequented. It was taken by Chengiz Khan after his capture of Bamian; it was followed by Moorcroft and Burnes on their journeys to Balkh and Bokhara; it was traversed by Lord and Wood after their failure at the Kushan pass; and it was surveyed by Sturt in A.D. 1840, after it had been successfully crossed by a troop of horse artillery. As, however, it is noted that there was a mountain named Aruna at a distance of five miles to the south, it is almost certain that this city must have been on the famous site of Begram, from which the north end of the Siakh-Koh or Black Mountain, called Chahal Dukhtar or the Forty Daughters, lies almost due south at a distance of 5 or 6 miles. Begram also answers the description which Pliny gives of Cartana, as Tetragnon, or the Square; for Masson, in his account of the ruins, especially notices some mounds of great magnitude, and accurately describes a square of considerable dimensions. General Cunningham says that if he is right in identifying Begram with the Kiulu-sa-pang of the Chinese Pilgrim, the true name of the place must have been Karsana, as written by Ptolemy, and not Cartana, as noted by Pliny. The same form of the name is also found on a rare coin of Eukratides, with the legend Kurisiye nagara, or city of Karisi, which he has identified with the Kalasi of the Buddhist chronicles as the birthplace of raja Milindu. In another passage of the same chronicle, Milindu is said to have been born at Alasundra or Alexandria, the capital of the Yona or Greek country. Kalasi must therefore have been either Alexandria itself or some place close to it. The latter conclusion agrees exactly with the position of Begram, which is only a few miles to the east of Opian. The appellation of Begram means, he

believes, nothing more than the city par excellence, as it is also applied to three other ancient sites in the immediate vicinity of great capitals, namely, Kabul, Jalalabad, and Peshawur. Masson derives its appellation from the Turki, be or bi, chief, and the Hindi, gram or city, that is, the capital. But a more simple derivation would be from the Sanskrit vi, implying certainty, ascertainment, as in vijaya, victory, which is only an emphatic form of jaya, and with the prefix in Vigrama would therefore mean emphatically the city, that is, the capital; and Bigram would be the Hindi form of the name, just as Bijaya is the spoken form of Vijaya. The plain of Begram is bounded by the Panjsher and the Koh-i-daman rivers on the north and south, by the Mahighir canal on the west, and on the east by the lands of Julgha, in the fork of the two rivers. Its length, from Bayan on the Mahighir canal, to Julgha, is about 8 miles; and its breadth, from Kilah Baland to Yuz Bashi, is 4 miles.—Cunningham's India, pp. 21, 237.

OPIUM.

Afm, Afyuni, . . .	ARAB.	Caruppa, . . .	MALEAL.
Hapium, . . .	BAL.	Shir-i-kush-kush, . . .	PERSS.
Rein, . . .	BURM.	Opiu, . . .	PORT., SE.
O'-fu-yung; O'-pi-en, CHIN.		Makovi sok, . . .	RUS.
Yang-yen; Ya-pi-en, "		Chassa; Apaynum, SANSK.	
Fu-yung, . . .	"	Abim, . . .	SINGH.
Valmuesaft, . . .	DAN.	Vallmo-saft, . . .	SW.
Mohmsaft, . . .	GER.	Apini, . . .	TAM.
Opion; Aphionion, GR.		Abhini, . . .	TFL.
Oppio, . . .	IT.		

Opium is the concrete inspissated juice of the poppy, Papaver somniferum, obtained by making incisions in the capsules, and collecting the exuding juice. The plant is a native of Western Asia, and probably also of the south of Europe. Opium as a medicine has been used from the earliest ages; but when it was first resorted to as a luxury, it is impossible to state. Such must have happened from very early times, as it happens daily in the present; but it certainly extended with the spread of Muhammadanism, when, by the tenets of the reformer, wine and fermented liquors being discountenanced, opium came in their stead along with the bhang or hashesh (made from hemp), coffee, and tobacco. From the inhabitants of the Eastern Archipelago probably acquired their predilection for opium, and although their particular manner of indulging in it has evidently been derived from the Chinese, China, where at present it is the most extensively used, cannot be said to have indulged long in the practice. The Pharmacographia, without quoting its authority, states that opium smoking only began in China in the latter half of the 17th century. In 1780, the E. I. Company stationed two receiving ships in Lark's Bay, south of Macao.

Hippocrates is supposed to have employed it; Diagoras condemned its use in affections of the eyes and in carache. It was noticed by Scribonius Largus about A.D. 40; by Dioscorides about A.D. 77; also by Pliny and Celsus (A.D. 23; A.D. 38); but it does not appear to have been much employed until the time of the Arabs, except in the form of the confections called Mithridatica, Theriaka, and Philonium. The Arabic name Afyuni, the Hindi Afim, and the name O'-fu-yung, by which it is known in China, seem all to have proceeded from the original Greek name, which is itself derived from Opos, juice. The Sanskrit Apaynum may have a similar origin, or it may be the source

of the Grecian name. In more recent times, the opium of India was mentioned by Barbosa, who visited the Malabar coast about 1511. Pyres, in a letter from Cochin to king Manuel of Portugal, 1516, describes the opium of Egypt, of Cambay, and of Cous, the last place being supposed to be Cutch. Garcia d'Orta, writing in the middle of the 16th century, tells of the Malwa opium in Cambay, also of the opium of Aden, of that from Cairo and Upper Egypt; and the Opium Thebaicum is also described by Prosper Alpinus, who visited Egypt, 1580-83. Kacmpfer, when in Persia in 1687, described the kinds of opium made there, and also the electuaries or Theriaka, which they made of opium, flavoured with ambergris, cardamom, cinnamon, mace, nutmeg, and saffron. The English East India Company, on becoming rulers in British India, found it one of the maskarat or intoxicating excise articles of the country. In 1773, the contract for the supply of opium was given to Mir Munkeer, to deliver Behar opium at Rs. 320, and that of Oudh at Rs. 350 per maund, say about Rs. 4 the lb.

The poppy is now grown for opium in Asia Minor, Northern Africa, Persia, China, and India, and the last two countries yield the principal supply. Eighteen kinds are, however, known to commerce. In India it is grown in Oudh, the Panjab, in Jammu and Kulu, in the Himalaya, Rajputana, Cutch, Gujerat, Kattyawar, Central India, Central Provinces, Berar, and Mysore; but the opium made for export from India is chiefly in Malwa, Behar, Patna, and Benares. The cultivation of the poppy for the Bengal opium is confined to the large central Gangetic tract, about 600 miles in length and 200 in breadth, which is bounded on the north by Gorakhpur, on the south by Hazaribagh, on the east by Dinapur, and on the west by Agra. This tract is divided into the two agencies of Behar and Benares, the former being presided over by an agent stationed at Bankipur, and the latter by an agent at Ghazipur; both agencies are under the control of the Board of Customs, Salt, and Opium, in Calcutta. There is no extensive poppy cultivation in the Madras and Bombay Presidencies, and the opium received at Bombay is brought under passes from the Native States in Malwa and Gujerat. In the Panjab, opium is not made a government monopoly as it is in Bengal; the people are free to cultivate if they choose, only it ranks as a 'zabti' or specially assessed crop, and has certain higher charges made upon it; the sale of opium, poppy heads (quite a separate thing), bhang, ganja, and charras, which are collectively termed 'maskarat,' is restricted, and these articles are subject to excise duty. Opium used in the Panjab comes principally from Kulu, in the Himalaya, but is grown also in the plains, especially in the district of Shahpur. In 1870-71, opium to the value of Rs. 44,400 was manufactured in the Nundidrug division of Mysore. In the eleven months from April 1871 to February 1872, 8688 lbs. were manufactured in the Bangalore and Kolar districts; and in 1875-76 the quantity exported to British territory was valued at Rs. 2212. In West Berar, the poppy is largely grown in the Buldannah district; between Maiker, Janiphal, and Bassim, the people are busily occupied, and exhibit an expertness betokening full experience. In 1870-71, 544 acres of land in the Buldannah district were under cultivation for opium.

Opium is largely manufactured in the fertile table-land of Malwa in Central India, which is mostly under the rule of native chiefs, of whom Sindia and Holkar take the first rank. Rs. 700 per chest is levied on that which passes through British territory for shipment to China.

In China, the poppy is largely cultivated in Sze-chuen and Yunnan. In Yunnan the poppy fields constitute a third of the whole cultivation, and are yearly augmenting. Mr. Medhurst, Her Majesty's consul at Shanghai, informed the Government of India that the cultivation of opium had increased enormously, but that the consumption had increased *pari passu*, and the market for the Indian drug had been but slightly affected. The province of Sze-chuen seemed to be the greatest producer. The ordinary price of the drug, as prepared in that province, was about Rs. 820 for 1334 lbs. avoirdupois. At Hankow it had risen to Rs. 930. Indian opium was an expensive luxury, indulged in by a few rich men and high officials. Mr. Man, writing in 1877, mentioned that the poppy is grown all over Sheng-kiang, which is another name for the province of Liao-tung, of which New-chang is a part. In Kirin Province, out of every ten acres of available soil, eight acres are devoted to the poppy. In Tse-tse-har the poppy has been so largely introduced as to cause quite a revolution. In 1873, the Rev. J. Edkins reported in the North China Herald that for 300 miles, between the Yellow River and the city of Tai-na-fee, poppy crops were seldom out of sight. This increase of poppy crops had occurred in the past few years, having spread from Yew-chu; and Chinese officers were making raids on poppy grounds, but they were spasmodic and inefficient. In many other parts the poppy was also cultivated, and Mr. Edkins was of opinion that, wherever the soil is dry and light, the cultivation would extend, as it had proved to be much more profitable than other crops. By the year 1880, all over the west of China, in the provinces of Yunnan, Sze-chuen, Kwi-choo, and South-Western Hou-pe, opium cultivation was everywhere tolerated, and in most places encouraged by the provincial officials. In Manchuria every farmer and every cottager had their little plot of poppy. To the north of the Yang-tze-kiang, the poppy in many districts was said to be superseding the growth of cereals. In 1875, Manchuria yielded 400,000 pikuls. In 1876, the lands of Yunnan were described as a sea of poppies. Messrs. Soltan and Stevenson, who travelled from Burma through Yunnan to Hankow, found three-fourths of all the land under tillage devoted to its growth. All the good land in Yunnan was taken up with its cultivation. The crop of Western China in 1881 was estimated at 97,000 pikuls, as under:—Western Hou-pe district, 2000 pikuls; Eastern Sze-chuen, 45,000; Yunnan, 40,000; Kwi-choo, 10,000. Price of North China opium, per Chinese ounce, 2-8 to 3-2 taels; Malwa opium, at New-chang, 5-8; Patna, 5-4; Chinese, 2-8. Persia has been trading with China since 1854. In Persia, in 1871, the crop of opium was estimated at 2500 chests, but in 1879-80 the quantity was 7100 chests, and the estimate for 1880-81 was 10,000 chests. The Persian opium imported into China was 684 chests in 1877, and 3446 in 1879. Surgeon-Major Sheppard examined some samples of it, and pronounced it excellent. But

that taken is chiefly from Smyrna, and is employed in adulterating Malwa opium and the better classes of China opium. In the ten years up to 1881, the crop in Asia Minor had averaged 6000 chests, of which about two-thirds finds its way to the Smyrna market, the remainder to Constantinople. This opium contains a high proportion of morphia, and is largely used for medical purposes in Europe.

Indian Manufacture.—The operations of cultivating the poppy and then manufacturing its juice into good opium, require patience and delicate treatment. It has been truly said that the success of an opium crop depends entirely on the care which is bestowed upon it. In 1878-79, the total output in British India was 91,200 chests, of which the export value amounted to £12,993,985, and the net profit to the British Indian Government was £7,700,671. Rather more than half this total was derived from the Bengal monopoly; the other moiety was from the transit cess levied on the Malwa product. About £1,000,000 worth of this opium was exported to Burma and the Malay settlements. The Chinese purchased the remainder for nearly £11,000,000.

Rajputana.—In none of the ancient heroic poems of Hindustan is opium ever alluded to; the guest is often mentioned in them as welcomed by the *munwar piala*, or 'cup of greeting,' but nowhere by the *uml-pani*, or 'infused opiate,' which in Rajputana has usurped the place of the *phul-rarrac*, or 'essence of flowers.' Rajputs used the opiate in its crudest form, by simply bruising the capsules, which they steeped a certain time in water, afterwards drinking the infusion, to which they gave the name of 'tejarro,' and not unfrequently 'post,' 'the poppy capsule;' and this practice still prevails in the remote parts of Rajputana, and in parts of the Panjab.

Malwa.—The culture of the poppy for opium seems to have been at first confined to the Doab tract between the Chambal and Sepra, from their sources to their junction; whence it spread throughout Malwa, and into various parts of Rajputana, especially Mewar and Harauti. Kunbi and Jat, and Banya and Brahman, try the culture, but the Kunbi extracts one-fifth more from the plant than any of his competitors. In Rajputana the cultivation of opium increased in the inverse ratio of general prosperity; as war, pestilence, and famine augmented their virulence and depopulated the country, so did the culture of the poppy appear to thrive. The predatory system which succeeded Moghul despotism gradually restricted the harvests of barley, wheat, and gram to a bare sustenance for the families of the cultivator, who then found a substitute in the poppy. From the small extent of its culture, he was able to watch it, or to pay for its protection from pillage; this he could not do for his corn, which a troop of horse might save him the trouble of cutting. The maximum of oppression in Mewar was the maximum of the culture of the poppy in Malwa. Emigration commenced in S. 1840 (A.D. 1784); it was at its height in S. 1856 (A.D. 1800), and went on gradually depopulating that country until S. 1874 (A.D. 1818). Its consumption, of course, kept pace with its production, it having found a vent in foreign markets. The districts to which the emigrants fled were those of Mundisore, Kachrode, Oneil, and others situated

on the feeders of the Chambal, in its course through Lower Malwa. There they enjoyed comparative protection and kind treatment, under Appa Sahib and his father, who were long the farmers-general of these fertile lands. Appa advanced funds, and appointed them lands, all fertile though neglected, in which they excavated wells for themselves. They abandoned altogether wheat and barley, growing only *makki* or 'Indian corn' for food, which requires no irrigation, and to which the poppy succeeds in rotation; to these and the sugar-cane, all their industry was directed. From the year S. 1840 (A.D. 1784) to S. 1857 (A.D. 1801), the market price of the crude opium from the cultivator ran from sixteen to twenty-one *salimshahi* rupees per *durri*, a measure of five *pucka* seers, each seer being the weight of ninety *salimshahi* rupees. This was the price of the drug by the grower in the first stage, and a better criterion than that of the manufacturer in its prepared state. In the year S. 1857, it rose to twenty-five rupees; in S. 1860 to twenty-seven, gradually increasing till S. 1865 (A.D. 1809), when it attained its maximum of forty-two, or an advance of one hundred and seventy per cent. above the price of the year A.D. 1784; after which it gradually fell until S. 1870 (A.D. 1814), when it was so low as twenty-nine. In S. 1873 it had again risen to thirty-three, and in S. 1874-75, when its transit to the ports of Sind and Gujerat was unmolested (whence it was exported to China and the Archipelago), it had reached thirty-eight and thirty-nine, where in S. 1876 (or A.D. 1820) it stood. In Kanthul (which includes Partabgurh Deola), or the tracts upon the Myhie river, opium was, about A.D. 1820, cultivated to a great extent, and adulterated in an extraordinary manner.

Writing about 1842, Dr. Impey reported that for the successful cultivation of opium, a mild climate, plentiful irrigation, a rich soil, and diligent husbandry, are indispensable. In reference to the first of these, Malwa is placed most favourably. The country is in general from 1300 to 2000 feet above the level of the sea; the mean temperature is moderate, and range of the thermometer small. The poppy is always cultivated in ground near a tank or running stream, so as to be insured at all times of an abundant supply of water. The rich black loam, known by the name of cotton soil, is that preferred there for opium. Though fertile and rich enough to produce thirty successive crops of wheat without fallowing, it is not sufficiently rich for the growth of the poppy until largely supplied with manure. There is, in fact, no crop known to the agriculturist, unless sugar-cane, that requires so much care and labour as the poppy. The ground is first four times ploughed on four successive days, then carefully harrowed; when manure, at the rate of from eight to ten cartloads an acre, is applied to it. This is scarcely half what is allowed a turnip crop in Britain. The crop is after this watered once every eight or ten days, the total number of waterings never exceeding nine in all. One *bigha* takes two days to soak thoroughly in the cold weather, and four as the hot season approaches. Water applied after the petals drop from the flower, causes the whole to wither and decay. When the plants are six inches high, they are weeded and thinned, leaving about a foot and a half betwixt

each plant; in three months they reach maturity, and are then about four feet in height if well cultivated. The full-grown seed-pod measures three and a half inches vertically, and two and a half in horizontal diameter.

Early in February and March the bleeding process commences. Three small lancet-shaped pieces of iron are bound together with cotton, about one-twelfth of an inch of the blade alone protruding; and this is drawn sharply up from the base to the summit of the pod. The sets of the people are so arranged that each plant is bled all over once every three or four days, the bleedings being three or four times repeated on each plant. This operation always begins to be performed about three or four o'clock in the afternoon, the hottest part of the day. The juice appears almost immediately on the wound being inflicted, in the shape of a thick, gummy milk, which is quickly covered with a brownish pellicle. The exudation is greatest over-night, when the incisions are washed and kept open by the dew. The opium thus derived is scraped off next morning with a blunt iron tool resembling a cleaver in miniature. If the scraper be passed heavily over the seed-pod, so as to carry with it a considerable portion of the beard or pubescence, it contaminates the drug and increases its apparent quantity. The work of scraping begins at dawn, and must be continued till ten o'clock; during this time a workman will collect seven or eight ounces of what is called 'chick.' The drug is next thrown into an earthen vessel, and covered over or drowned in linseed oil, at the rate of two parts of oil to one of chick, so as to prevent evaporation. This is the second process of adulteration,—the ryot desiring to sell the drug as much drenched with oil as possible, the retailers at the same time refusing to purchase that which is thinner than half-dried glue. One acre of well-cultivated ground will yield from 70 to 100 pounds of chick. The price of chick varies from three to six rupees a pound, so that an acre will yield from 200 to 600 rupees' worth of opium at one crop. Three pounds of chick will produce about two pounds of opium, from the third to a fifth of the weight being lost in evaporation. It now passes into the hands of the Banya, who prepares it and brings it to market. From twenty-five to fifty pounds is tied up in parcels in double bags of sheeting cloth, which are suspended from the ceilings so as to avoid air and light, while the spare linseed oil is allowed to drop through. This operation is completed in a week or ten days, but the bags are allowed to remain for a month or six weeks, during which period the last of the oil that can be separated comes away; the rest probably absorbs oxygen and becomes thicker, as in paint. This process occupies from April to June or July, when the rain begins. The bags are next taken down, and their contents carefully emptied into large vats from ten to fifteen feet in diameter, and six or eight inches thick. Here it is mixed together and worked up with the hands five or six hours, until it has acquired a uniform colour and consistence throughout, become tough and capable of being formed into masses. This process is peculiar to Malwa. It is now made up into balls of from eight to ten ounces each, these being thrown, as formed, into a basket full of the chaff of the seed-pods. It is next spread out on ground

previously covered with leaves and stalks of the poppy; here it remains for a week or so, when it is turned over and left further to consolidate, until hard enough to bear packing. It is ready for weighing in October or November, and is then sent to market. It is next packed in chests of 150 cakes, the total cost of the drug at the place of production being about fourteen rupees per chest, including all expenses. Manipulations so numerous, complex, and tedious as those described, give the most ample opportunities for the adulteration to which the nature of the drug tempts the fraudulent dealer.

British India Process.—In the British provinces the culture of the poppy is carried on solely for its opium product, and is more of a horticultural than an agricultural undertaking; and the goindor or gauhani lands near villages are, as a rule, always chosen. It is grown for opium in Bengal, the N.W. Provinces, and Oudh, and has always been a Government monopoly. It can be traced back to the 16th century. Under the British Government, it was originally in the hands of contractors, who monopolized the manufacture, but in 1797 the management of it was entrusted to a covenanted civil servant. In that year the total area of cultivation amounted to 9460 bighas; but it has steadily increased, and in 1878-9 it reached 928,241 bighas. From August to the end of October, the Government enters into agreements with the cultivators, through the agency of one of their number, whom they themselves select, and he receives a licence and is responsible for balances and any shortcomings, and the cultivators receive advances ranging from Rs. 4 to Rs. 6 per bigha. On the completion of the agreements, the fields are roughly measured, and sowings commence about the middle of November, and are continued till the first or second week of December; and on completion, the fields are accurately measured, and the name and caste of every cultivator, and the area of his field, are entered in the licence. During the cold-weather inspection tours, opium officers and their establishments examine the crop and estimate the out-turn.

The poppy seed germinates in from 10 to 15 days, and when about 2 inches high the fields are carefully weeded, watered, and thinned, those to be retained kept 3 or 4 inches apart from each other. After two weeks, these field operations are repeated, all sickly plants and all foreign herbs are carefully removed, and vigorous plants only left standing, at distances of 7 or 8 inches from each other. Watering and weeding are carried on until the plants commence to flower, which they do about the beginning of February, the time varying according to the time of sowing; and a good cultivator will sow portions of his field at intervals of a week, so that the whole of the plants may not become ready to have the drug extracted at the same time.

A short while after the plants have commenced flowering, the petals are carefully watched and collected, in the following manner:—The forefinger and thumb encircle the stem just beneath the pod, and with the other fingers drawn inwards, a kind of tube is formed. This tube is then raised straight over the pod, and if the petals are matured, they come off; they are never plucked off, as that would injure the pod. The petals thus obtained are formed into platters (patti) for

wrapping round the opium cakes or balls. On the removal of the petals, the pods ripen rapidly, and when they become hard in February and March they are lanced with a three-pointed lancet; a milky juice immediately exudes, and oozing out slowly, the fluid portion evaporates; the outer portion of the tear hardens and assumes a rose-red appearance, the inner, semi-fluid part being of a pinkish hue. The incisions are made in the capsule wall in the afternoon, and if the night be still and dew fall, the yield of opium is full. The tears of opium are carefully scraped off in the morning with a small spoon-shaped iron or shell scraper, and the finger or thumb is run over the incisions to close them. The tears thus collected are placed in an earthen vessel, slightly tilted to drain off the dew. A single healthy plant, under favourable circumstances, yields about 75 grains of opium in from 5 to 8 scarifications. The number of scarifications needed for all the juice to exude ranges from 1 to 8 and even 10. The above operations are carried on every second or third day, according to the time of collection, whether late or early in the season, or condition of the plant, whether sickly or healthy, until all the opium has been extracted from the pods. When the whole of the drug has been collected and treated separately as above described, it is carefully manipulated and put into a new earthen pot (kora), and set aside in some well-ventilated and safe place. Should the opium be of low spissitude, it is exposed in some shady place, very carefully turned over, so as not to spoil the grain (dana), and is so treated till it reaches the required consistency (jharti), and remains in the custody of the cultivator until weighed by the opium officers.

The opium balls or cubes are wrapped up in platters made from the petals of the poppy plant. When the petals have been collected in the manner already mentioned, a circular-ridged earthen plate about twelve inches in diameter is placed over a slow fire, the required quantity of petals are placed flat over it, and these are pressed with a damp cloth till they have adhered together; the flower leaf is then removed and left to dry; these platters are, as a rule, from 6 to 12 inches in diameter, and vary in thickness from that of a sheet of thin paper to that of a sixpence, and are in appearance, when well made, like a pancake.

After the opium has been extracted, the pods are allowed to dry, and are, when in this state, broken up and the seeds collected for next year's sowing, and the surplus for sale.

The produce from one bigha of land sown with poppy varies from 1 to 10 and even 15 seers of opium, according to the nature of the soil and the amount of care bestowed on the land by the cultivator. The leaves of the plant are delivered into the opium factory at 12 annas the man (maund), to be used for packing the opium balls in the chests, to prevent them shifting about and becoming crushed. Opium is paid for at rates from Rs. 4 to 5 per seer (2 lbs.), according to its consistency.

Opium of two qualities is made by Government, —one is called *provision*, or that exported to foreign countries; the other is called *abkari*, and is supplied to the different revenue collectors for consumption in the country; the only difference between them being that the former is manu-

factured at $\frac{1}{16}$ consistency, and the latter at $\frac{1}{8}$ consistency. The two alkaloids, morphine and narcotine, are also prepared by Government, and supplied to their depôts of medical stores. The whole of the poppy plant and its products are of value to the grower; and in making up the opium into balls, in which form it is nearly all permanently kept, nothing remains in contact with it but the products of the poppy plant.

A prickly plant called 'Bhar-bhar,' as also a parasitic plant called 'tokra,' are most destructive to the poppy; several sorts of insects do immense injury to it, and the plant is liable to diseases. Of these, 'murkha' and 'khurka' are the two most fatal, and a blight, called 'ughia,' has latterly proved very fatal to the plant, and hail, frost, rain, and strong winds also occasion loss.—*Carnegy*.

The plants are occasionally destroyed by insects which attack the roots and leaves, and a second even or third sowing becomes necessary, but their produce is generally much smaller. In 1878 the poppies of Behar were attacked by innumerable hordes of *Heliothis armigera*.

Patna Process.—Dr. R. Lyell, writing regarding the Patna opium, says that the white variety alone is grown. He mentions his belief that the richness and quantity of the poppy juice are greatly influenced by the nature of the soil on which it is grown, by the modes of cultivation as regards the irrigation, and quantity of manure, kind of seed, etc. The lands in the immediate vicinity of a village are preferred, as facilitating attention to the crop and irrigation. With strong soil, it is grown as a second crop, generally after Indian corn; but in weaker soils, the land is allowed to be fallow when the poppies are off the ground, and is as well manured as the cultivators can afford. Towards the end of September and beginning of October, the land is carefully prepared by two or three ploughings, and the clods of earth are broken down by a hangah or clod crusher. About the middle of October, the sowing is generally begun, and the seed is thrown broadcast, from three to four seers being required for each bigha. To facilitate irrigation, the field is divided into compartments 6 feet by 4 feet; the ground is well watered two or three times before the plant springs, water containing a large quantity of saline matter being preferred; and during its progress to maturity the plant is watered when required. After the plants attain the height of 5 or 6 inches they are thinned at intervals. At first a distance of 3 or 4 inches is preserved between the roots, increased to 6 inches as the plants mature. When not sufficiently thinned, the plants are stunted and the capsules are small; great attention is at the same time bestowed on the weeding and loosening the soil. The young plants removed at the first thinning are sold and eaten as salad; those of the second and third thinning possess narcotic properties, and are seldom used. The plant matures about the middle or end of January, and as soon as the petals of the flower begin to fall off they are carefully collected and used as a covering for the opium cakes. The three kinds of petals are sold by the cultivators at 6, 8, and 10 rupees the maund. When fresh, they contain a large quantity of gummy matter, which is dried up by spreading them over a hot girdle. About the third week in January, the capsules are sufficiently ripe to undergo scarification by a

four or five bladed lancet, with which are made oblique or longitudinal incisions through the epicarp and pericarp of the capsule. The scarification is made in the afternoon; the exudation of milky juice takes place immediately, and it is collected early on the following morning. Each set of incisions yields, on an average, a grain or two of opium, and they are repeated four or five times, or as long as any juice continues to flow. The most favourable state of the weather is a still atmosphere and a moderate dew, which allow the juice to thicken and collect in irregular tears, these grains being of a higher consistence and of a rose-red colour towards the surface, while towards the centre they are semi-fluid and of a reddish-white colour. Opium in this state is said to be 'raw.' Strong winds, or a cloudy sky preventing the formation of dew, greatly reduce the quantity of the produce, it being found that the scarifications made in the capsules become closed up by the slight oozing of the juice, and a smaller quantity of opium is obtained. On the other hand, an excessive dew opens the incisions, and the juice drops off the capsules on to the ground, and is lost, or it becomes mixed with a large quantity of dew, which retards the evaporation of the general mass, and separates the soluble from the insoluble parts.

In the manufacture of opium, it is an object of the first importance that when first collected it should contain as little moisture as possible, so that it may be raised to the highest degree of spissitude in the shortest time without exposing to the air. The action of the sun's rays is most detrimental to the physical properties of opium, causing it to assume a black ductile appearance. The average consistence of the juice when first collected is from $\frac{1}{10}$ to $\frac{1}{15}$ consistence. The average quantity produced in a biga is from five to seven seers, according to the quality of the soil.

The easterly winds of Patna are always damp, and their prevalence while the fresh collected opium remains under a consistence of $\frac{1}{10}$ produces a partial solution of it, especially when it contains moisture, and an exudation of drops of a black shining liquid, termed 'pussawa,' occurs on the surface of the opium. This pussawa contains many of the active principles of the drug, particularly the resin of it. The proportion of pussawa is sometimes increased by the fraudulent admixture of water by the growers, done in the hope that their opium will be purchased by the gross weight, but it is paid for at half the price of standard opium, viz. Rs. 1.10 per seer. The growers keep their opium in shallow earthen vessels, placed at an angle of about 45° to facilitate the draining off of the pussawa, and the direct rays of the sun, dust, and impurities are carefully guarded against. It is turned over in the dishes every week or two. Poppy seeds yield by expression 56 per cent. of a bland oil, of a pale-gold colour, fluid within ten degrees of the freezing point. It sells in the bazar at from 8 to 10 rupees per maund; is used for cooking and burning. The oil-cake remaining from it is highly nutritious for cattle.

Poppy leaves are used to pack the opium cakes or balls. Each chest of opium contains 40 balls, at 1 seer 7 chittak and 2 kutchas of opium per cake. Dr. Lyell says, 'In Smyrna the seed used

is obtained from capsules that have not been punctured for opium. Also, by reducing the number of capsules on a plant, the remainder attain a greatly larger size, and yield a greater quantity of opium of the first quality.'

In Asia Minor and Egypt the poppy growers do not pierce the capsules from below upwards, as is done in India, but make a cut round the capsule with a knife. In Egypt the knife is carried twice round.

China.—Opium has been known in China at least ever since the Mongol dynasty. During the Ming dynasty it came into more general use as an astringent and sedative medicine, in diarrhoea, dysentery, rheumatism, but generally in combination with other medicines. Li-shi-chin in his *P'en Ts'au* (about A.D. 1550) describes its collection in a very clear manner, and mentions the fact of its regular sale as a drug. All the early writers are silent as to its use, except in medicine; its nature is very clearly explained in the work of Li-shi-chin. He calls this herb the internal support. That was about the middle of the 16th century. By the 18th century it must have become a luxury, and the mode of using it by smoking is purely Chinese. During the reign of the emperor Kien Lung, who reigned from 1733 to 1796, a tariff was regularly established, and the duty fixed at three taels for 100 catties, and 2 taels 4 mace and 5 candarines for feca. Mr. Hobson of Hankow has shown that opium was a recognised product of the prefecture of Yung-chan in the west of Yunnan in the year 1736. It is said to have been introduced into Sze-chuen from India and Tibet in the middle of the 18th century. Fully one-half the best arable land in Sze-chuen is believed to be now given up in spring to the bearing of an annual crop of poppy; probably seven-tenths of the dwellers in towns in Sze-chuen are habitual opium smokers, and more than one-half of the country people have adopted this seductive habit. Indian opium, Kung-kau or Kwang-t'u, is being competed with by the native drug, although the price of the former, and its name for better flavour, are still kept up by the native preference for it. Sze-chuen opium, called Chuen-t'u, in good years, can be produced at half the price of the Indian drug. The best Sze-chuen drug comes from Kwi-choo and Pi-hien; and of the extract used for smoking, called Yen-kau and Shuh-yen, the Sze-chuen opium yields more than the Indian product. Yunnan opium and that from Kwi-choo are called Nan-t'u, and by the Chinese are all derisively spoken of as dirt, or as Yoh-t'u, medicinal earth. The opium from Kan-su, Shen-si, and Shan-si is called Si-t'u, and yields a good extract. Since 1839, a large quantity of opium, some of it of a very inferior kind, is produced in Ho-nan province, and largely consumed on the spot. Hing-ching-hien, and places in Hwang-chau-fu, all in Hu-peh, produce the drug. Manchuria, and in fact all parts of the Chinese empire, produce more or less of this crop, which is sown in the tenth month, and is secured by the third month of the next year.

The Portuguese took it as an article of commerce to China, but up to 1767 the average landed was 200 chests. After 1767 it suddenly increased to 1000 chests, and the English East India Company in 1773 made their first venture. They repeated it in 1776; and the drug, which cost in Calcutta Rs. 500 the chest, was sold in China for

500 dollars. In 1794, Indian opium was imported to the extent of 1500 chests.

At this time the Chinese Government began their efforts of repression. In 1796, it was declared a crime to smoke opium. Up till 1842, it was contraband. British adventurers continued to disregard the Chinese prohibition, and in the year 1839 the Chinese authorities seized and destroyed 20,000 chests of opium, the property of British subjects then in Chinese waters. This led to war between Great Britain and China, and the Chinese paid an indemnity for the opium destroyed, and paid also several millions sterling as compensation for the expenses of the war. In 1842, the treaty of Nankin released the trade. In 1844, however, the emperor was still objecting to the national weakness for opium being made a source of revenue. He said, 'It is true that I cannot prevent the introduction of the flowing poison,—gainseeking and corrupt men will, for profit and sensuality, defeat my wishes; but nothing will induce me to derive a revenue from the vice and misery of my people.' In 1800, the emperor Hea King issued a proclamation forbidding its importation, and prohibiting its cultivation in Yunnan. Nevertheless, in 1827 the foreign imports had increased to nearly 10,000 chests per annum; ten years later to 40,000 chests; in 1856-57 the import was 70,000; and in 1881 it was 90,000. From this rapid increase it is but fair to conjecture that the use of the drug was, previous to the 18th century, limited in China to medical purposes, and that, however long it may have been cultivated in the Chinese province of Yunnan, its use as a luxury was limited, and even in that province the cultivation must have been small. (On the coast, however, Dampier states that the use of opium in his time was great and widely extended, and could not therefore have been recently acquired. He states that in 1688 he took in at Acheen from 300 to 400 pounds of opium to trade with at Malacca, where he disposed of it privately, as it was prohibited. From Malacca, he says, ships were accustomed to take it to the different Malay states, and exchange it for pepper and other articles of produce.

After the treaties of Tien-tsing and Peking, opium was declared a legal import at the duty of 30 taels per pikul, i.e. about £10 per chest, and transit dues were also arranged. But the treaty of 1876, known as the Chefoo convention, which was negotiated between Sir Thomas Wade and the Chinese Government, has remained unaccepted by the British Government.

In 1880, the export coastwise to Hankow of Szechuen opium was 927 pikuls. At Hankow it pays an ad valorem export and coasting duty of 7½ per cent. It is known in the trade as Chuen-tu, and sells at 14 taels, against 15·60 taels for Palung and 17 taels for Yunnan opium,—the quantity in each case being 100 Chinese ounces = ¼ of 188½ lbs. avoirdupois. Yunnan opium is also exported.

Mr. Edkins says that China grown opium is not palatable even to the Chinese. Mr. Caine, British consul at Hankow, writing in 1871, said that no considerations of an inconsiderable temporary excellence will ever induce the rich to purchase so inferior an article as the native drug.

Opium is at present largely consumed in the Archipelago, in China, in the Indo-Chinese

countries, and in many parts of India, much in the same way in which wine, ardent spirits, malt liquor, and cider are consumed in Europe. Stupor, reverie, and voluptuous listlessness are the immediate effects produced. In this state the individual can be at once and easily aroused to exertion or business. No sickness, constipation, or any other functional disturbance supervenes on each indulgence. When the habit is but moderately followed, it appears to occasion no greater effect than the proportionate indulgence in wine or other spirituous liquors. Its deleterious character has been much insisted on, but generally by parties who have had no experience of its effects. Like any other narcotic or stimulant, the habitual use of it is amenable to abuse, and, being more seductive than other stimulants, perhaps more so; but this is certainly the utmost that can be safely charged to it. Millions consume it without any pernicious result, as millions do wine and spirits without any evil consequence. There is not known any person of long experience and competent judgment who has not come to this common-sense conclusion. Dr. Oxley, a physician and naturalist of eminence, and who had had a longer experience than any other man of Singapore, where there was a high rate of consumption of the drug, gave the following opinion:—'The inordinate use, or rather abuse, of the drug most decidedly does bring on early decrepitude, loss of appetite, and a morbid state of all the secretions; but I have seen a man who had used the drug for fifty years in moderation without any evil effects; and one man I recollected in Malacca, who had so used it, was upwards of eighty. Several in the habit of smoking it have assured me that, in moderation, it neither impaired the functions nor shortened life, at the same time fully admitting the deleterious effects of too much.' There is not a word of this that would not be equally true of the use and abuse of ardent spirits, wine, and perhaps even of tobacco. The historian of Sumatra, whose experience and good sense cannot be questioned, came early to the very same conclusion; and the question of its superiority over ardent spirits appears to have been for ever set at rest by the high authority of Sir Benjamin Brodie. 'The effect of opium, when taken into the stomach,' he says, 'is not to stimulate, but to soothe the nervous system. It may be otherwise in some instances, but these are rare exceptions to the general rule. The opium-eater,' he adds, 'is in a passive state, satisfied with his own dreamy condition, while under the influence of the drug. He is useless, but not mischievous. It is quite otherwise with alcoholic liquors.' The editor has seen many smokers of the extract; has purposely sat amongst them, for prolonged occasions, in an opium saloon of Madras, and has seen in India numerous children and grown-up people under the influence of opium, without any evils resulting from it.

Opium, as 'a luxury, is consumed in different ways. In Great Britain it is either used in a solid state, made into pills, or a tincture in the shape of laudanum. Insidiously it is given to children under a variety of quack forms, such as 'Godfrey's cordial,' etc. In India, the pure opium is either dissolved in water and so used, or rolled into pills. It is there a common native practice to give it to children when very young, by mothers

who require to work and cannot at the same time attend to their offspring. In Rajputana, it is dissolved in water, and the solution, called kusumba, is sipped. There, and in the Panjab, a decoction or infusion, called post, is made by steeping the unripe poppy head in water. In China, usually an extract of it is smoked, or is, in some form or other, swallowed. In Bali, it is first mixed with China paper, and when to be used it is rolled up with the fibres of a particular kind of plantain, and inserted into a hole made at the end of a small bamboo, and smoked. In Java and Sumatra, it is often mixed with sugar and the ripe fruit of the plantain. In Turkey, it is usually taken in the form of pills, and those who do so avoid drinking any water after swallowing them, as this is said to produce violent colic; but to make it more palatable, it is sometimes mixed with syrups or thickened juices; in this form, however, it is less intoxicating, and resembles mead. It is then taken with a spoon, or is dried in small cakes, with the words *Mā-shā-allāh* imprinted on them. When the dose of two or three drachms a day no longer produces the beatific intoxication so eagerly sought by the opiophagi, they mix the opium with other drugs. It then acts as a stimulant. Besides being used in the shape of pills, it is frequently mixed with hellebore and hemp, and forms an electuary known by the name of majun, whose properties are different from that of opium or its extract, and may account for the want of similitude in the effect of the drug on the Turk and the Chinese. The majun electuary in use in India is variously compounded. In the Panjab, Rajputana, Sind, Cutch, Gujerat, Hindustan, the Mahratta country, in Telingana, by some of the various races, also in Assam, in Burma, as also among the Chinese and the Malays, it is being more and more used in various forms as a nervous sedative, and in Rajputana, Assam, Burma, and China to such an extent as to occasion anxiety in the minds of many regarding the future of the races using it. The Tamil, a Dravidian people of the south of India, and the Aryans of India, do not, however, use it in any form. It is a matter of race proclivities, and the Indo-Germanic tribes of Europe have never taken to it.

In China, since the early part of the 19th century, the emperors and the literati have been striving to restrain the people from its use, and the rude efforts to effect their object have twice brought on them unfortunate wars with Great Britain. But the action taken by the Chinese towards foreign importers has neither evinced a knowledge of man's wants, nor has it been in keeping with their treatment of their own peasantry, who are cultivating the poppy all over China, and two-thirds of the opium used in that country is of native manufacture.

The craving for a nervous stimulant to remove fatigue, to allay irritability, to lighten care, and to dispel gloom, is universal, and seeks satisfaction in many ways, as in the use of alcohol, hemp, opium, tobacco, tea, coffee, chloral hydrate, eau-de-Cologne. The mind often seeks a lull,—there is a natural craving for some soothing stuff. The Chinese authorities strove to prevent its importation, but a great national appetite for any article of consumption has its foundation in the real wants of the people, who manifest a predilection for it.

So long as man demands temporary confusion of mind and oblivion of his woes and cares, so long will he find means of obtaining these ends, and smugglers in armed opium-clippers landed it along the coast. It would have been possible for them to prevent the poppy being grown in China, seeing that three months are required for its ripening; and the Indian Government adopted this plan with regard to many of its provinces by Act 1 of 1878, which provides that, except in districts specially exempted, no one shall cultivate the poppy, manufacture, possess, or transport opium, under pain of imprisonment and fine.

In excess, as with other excesses, the effect can only be injurious. But, as Consul Lay says, 'in China the spendthrift, the man of lewd habits, the drunkard, and a large assortment of bad characters, slide into the opium-smoker, hence the drug seems to be chargeable with all the vices of the country.' The moderate use of opium is not only not injurious, but has a beneficial effect on the constitution, improving the health, and warding off sickness. And Consul Gardner, who visited many opium saloons, tells us of the Protestant Christians, who are prohibited opium, and are dissuaded from early marriage, that many die from consumption. Chinese told him that they took to opium-smoking to check blood-spitting.

Dr. Frederick Porter Smith, M.B., a medical missionary in China, tells us that the moderate use of the opium pipe is not incompatible with the health of those who practise it. He adds, however, that the positive necessity of improving or increasing the extract used leads to the loss of the volitional, digestive, and sexual powers, or, in other words, to the gradual degradation of the man. Consul Gardner himself smoked opium for a time, but suddenly stopped it, and suffered inconvenience. But a moderate opium pipe soothes the system, lessens coughs and consumptive tendencies, and is a prophylactic against marsh fever and malaria generally. Mr. Storrs Turner characterized it as 'a pacific and polite vice.' Similar to the smoking of tobacco, cigars, or cavendish, opium-smoking entices away from the use of ardent spirits. Before its introduction into China, there was a great deal more of intemperance from alcoholic intoxicants than is now to be seen in the land. Excess of ardent spirits is, in any country, more injurious than excess in tobacco or opium-smoking. On the average European who is accustomed to smoke tobacco, the smoking of opium in the Chinese fashion will not have any perceptible effect.

Maharaja Narendra Krishna says that many of the elderly and old Hindus of Bengal take opium, and that not a few young men wean themselves from drinking habits by betaking themselves to opium. When taken by the camel-feeders in the sandy deserts of Western Rajputana, it enables the men to subsist on scanty food, and to bear without injury the excessive cold of the desert winter night, and the scorching rays of the sun. Opium in Rajputana acts as a preventive of malarious fever. In the fens of England, a whole population use opium as a prophylactic against ague.

Extract of Opium is the form in which, in China, Further India, and the Archipelago, the drug is employed in opium-smoking. This is known in the Straits Settlements as Chandoo. It is called by the Chinese Yen-kau, also Shuh-yen. More of

the extract is said to be got from the Sze-chuen opium than from the Indian product. Chandoo is usually made by the keepers of the opium saloons, who are heavily taxed and squeezed. Rich people and Buddhist priests make their own chandoo.

The opium, as received at Singapore from Calcutta, is in boxes containing forty balls, each of the size of a 32 lb. cannon shot. These balls are enclosed in a husk of compressed poppy leaves, and contain a certain quantity of moist opium inside, but which in this state is unfit for consumption, for which it is prepared by four processes, in the following manner:—About three or four o'clock in the morning, fires are lighted, and, as the *first* process, a ball is divided into two equal halves by one man, who scoops out with his fingers the soft part inside, and throws it into an earthen dish; frequently during the operation moistening and washing his hands in another vessel, the water of which is carefully preserved, into which also is thrown the hardened poppy leaf husks, when all the removable opium is obtained. In the *second* operation, the husks are boiled until all their adhering opium is dissolved, and then strained through a double filter of cloth and China paper. The strained fluids are then mixed with the opium that was scooped out in the first operation, and boiled down in a large iron pot to the consistence of treacle. The refuse is dried and sold to Chinese, who adulterate good opium with it; and the filter paper is used by the Chinese as an external application in affections of the lower bowels. In the *third* operation, the dissolved treacle-like mass is seethed over a charcoal fire, strong and steady but not fierce temperature, during which it is worked, spread out, and again and again worked up to expel the water, but prevent it burning. When brought to the proper consistence, it is divided into half-a-dozen lots, each of which is spread like a plaster on a nearly flat iron pot, to the depth of from half to three-quarters of an inch, and then scored in all directions to allow the equal application of heat. One pot after another is then placed over the fire, turned rapidly round, then reversed, so as to expose the opium itself to the full heat of the red fire. This is repeated three times, the time and proper heat being judged by the workman from the aroma and colour. In this part of the process the greatest delicacy is demanded, for a little more or less fire would destroy the morning's work, or 300 or more dollars' worth of opium. The head workmen in Singapore are men who have learned their trade in China, and from their great experience are paid very high wages. The *fourth* operation consists in re-dissolving this fired opium in a large quantity of water, and boiling it in copper vessels till it be reduced to the consistence of the chandoo of the shops, the degree of tenacity being the index of its complete preparation, which is judged of by drawing it out by slips of bamboo. The quantity of chandoo obtained by the soft opium is about 75 per cent. But from the gross opium, that is, including the opium and the husk, the proportion is not more than from 50 to 54 per cent. In this lengthened seething process, the chandoo or extract becomes less irritating and more soporific, the vegetable matter, the resin and oil, the extractive matter and a little opium, being all thrown out in the refuse matter. The quantity of the extract

or chandoo obtained from opium depends much on the skill of the workman. But the produce from new opium is almost 10 per cent. higher than from old. Malwa and Persian opium yield almost equally; and the opiums of the Chinese districts all vary. In 1881, Surgeon-Major Sheppard analyzed samples of Shan-si and Amoy opium, and found them yielding a better extract than Patna or Behar, but deficient in aroma. The burning of this extract, in an incomplete manner, as is carefully practised by the Chinese, yields a smoke, containing sundry incomprehensible empyreumatic compounds unknown to the chemist, but producing by absorption into the pulmonary vessels a soothing torpor. The person about to use the pipe lies down and lights the drug at the flame of a candle; the shrivelled skin of the emaciated, confirmed opium-smoker fills out with a soft warmth, the breathing becomes full, the pulse slow and full, and in a few minutes there is a seeming loss of consciousness. The habit can be and is frequently broken off. The use of ammoniated valerian tincture, the employment of nuxvomica and other tonics, the temporary-smoking of the powdered root of the *Aucklandia costus*, and above all, the regular provision of wholesome food for both body and mind, are among the plans which may be adopted, along with occasional disciplinary measures, for the cure of the habit.

An adulterated chandoo is prepared on a large scale by mixing the ashes of the opium pipe with the raw opium, which facilitate the making of the watery infusion, and this is further filtered and evaporated to the consistence of a thin extract, which is combustible in the opium pipe held in the flame of a small lamp. This extract, when consumed, leaves a refuse, consisting of charcoal, empyreumatic oil, some of the salts of opium, and a part of the chandoo not consumed. One ounce of chandoo gives nearly half an ounce of this refuse, called *tyo* or *tinco*. This is smoked and swallowed by the poorer classes, who only pay half the price of chandoo for it. When smoked, it yields a further refuse, called *sam-shing*, and this even is used by the still poorer, although it contains a very small quantity of the narcotic principle. *Sam-shing*, however, is never smoked, as it cannot furnish any smoke, but is swallowed, and that not unfrequently mixed with arrack. Nothing is lost by the Chinese practised manipulator. From the ash about 50 per cent. of a smokeable extract is obtained. It is this adulterated article that enables the opium saloon to sell opium at apparently cost price, the ash paying for the light, attendance, house rent, and profit. Chandoo has never been analyzed; it is often adulterated; 75 per cent. is obtained from soft opium, 50 to 54 per cent. from the gross opium, *i.e.* including the husk. In the lost portion, what has disappeared of the opium alkaloids—morphia, narcotine, codeia, etc.—has never been shown, nor what is the composition of the resulting chandoo. Sir George Birdwood says that none of the active principles of opium are volatilizable, *i.e.* smokeable; and what chandoo smoke is remains unknown. Chandoo is largely exported from China.

Adulteration.—The value of opium increases for a short time by age; but this soon ceases to be the case, and Turkey opium in particular deteriorates unless carefully preserved from the air. To be enabled to judge of good opium, one must be

well acquainted with the different varieties of it, their respective colours, tastes, and textures, as well as the natural degree of moisture, and see that no mechanical admixtures are apparent, nor left on a filter. The modes of adulterating opium are various. Pounded leaves, catechu, cow-dung, coarse sugar, and many other ingredients, are used for this purpose.

Dr. Royle says the most injurious fraud is that of washing out the soluble and most valuable parts of opium, and bringing the residual mass for sale. In this case the opium loses its translucency and redness of colour, also its adhesiveness. Sand, clayey mud, sugar, molasses, cow-dung, datura leaves, the glutinous juice of *Ægle marmelos*, and even pounded poppy seed, are employed to adulterate opium. Malwa opium often contains oil and other matters obtained by the expression of the poppy heads. Some kinds of opium from which morphia has been extracted have been occasionally met with in European commerce. Adulteration, in China, is by adding mud, sesamum, and hemp seeds, and an extract from the fruit of the *Sophora Japonica*; but the Rev. Dr. F. P. Smith, M.B., says it is less tampered with than foreign opium.

In the Indian drying room, the balls of opium are liable to be attacked by weevils during moist winds.

Opium greatly varies as to its alkaloids. Sir W. O'Shaughnessy found that the morphia and narcotine in the Behar opium ranged from $1\frac{1}{2}$ to $10\frac{1}{2}$ per cent. The Pharmacographia notices sixteen natural alkaloids.

It may be said that a percentage of the population of the Panjab, of Rajputana, of Telingana, the Central Provinces, and the Mahrattas use opium,—the infants most largely. Deputy Surgeon-General Moore, during 1870, found 6.73 per cent. of the out-patients at Rajputana dispensaries using opium in the form of a solution or cold infusion, called amal-pani. In another inquiry, however, he found the percentage 11.32 out of 36,636 persons to be —males, 63.32; females, 10.74; children, 25.94. He found that all children get amal-pani. Other forms than amal-pani are only .31. Those using opium in Rajputana do not, as a very general rule, indulge in alcohol.

In Burma it is smoked, and the quantity imported has greatly increased, even more rapidly than the population. The consumption there of 1869 was doubled in 1879, while the population of 1868-69 was 2,395,985, and in 1878-79 it was 3,088,902. There is a continuous flow of immigrants from China (the Chinese in 1881 numbered 11,314), and their use of the opium pipe is without any bad results. Amongst the Burmese, however, the demoralization, misery, and ruin produced by opium-smoking presents a painful picture. The Chinese in Burma are diligently engaged in all the avocations of life. The Burmese, at all times indolent and averse to regular labour, can support themselves by working one day in three, and they have been unable to resist the temptation.

In the British settlement of Singapore, owing to the high rate of wages, and the prevalence of a Chinese population, the consumption is at the rate of about 330 grains a year for each person. In Java, where the Chinese do not compose above one in a hundred of the population, and where

wages are comparatively low, it does not exceed 40 grains. In China, Mr. Brereton estimated that, in 1881, out of a population of 400,000,000 the opium-smokers were 3,000,000. Of these, the smokers of foreign opium are estimated at 1,000,000. The total estimated value of the opium smoked is £25,000,000 sterling, viz. Indian, £16,800,000; Chinese, £8,400,000. At these estimates, the smokers of foreign opium spend 11d. per man daily, and the smokers of Chinese opium 2½d. daily.

Sir Robert Hart's introductory note to the reports and statistics on opium and opium-smoking says:—“In round numbers, the annual importation of foreign opium may be said to amount to 100,000 chests, or, allowing 100 catties to each chest, 10,000,000 catties (the catty is the Chinese pound; one catty is equal to one pound and a third avoirdupois). When boiled down and converted into what is known as “prepared opium,” the raw drug loses about 30 per cent. in weight; accordingly, 10,000,000 catties of the unprepared drug imported reach the hands of retailers as, say, 7,000,000 catties of prepared opium. The catty is divided into 16 liang (ounces), and the liang into tenths called mace; in 7,000,000 catties there are, therefore, 1,120,000,000 mace of prepared opium for smokers. Before reaching the smoker, opium pays the Chinese Government import duty and likin taxes amounting to, say, 100 taels, and is then sold at, say, 800 taels of Chinese sycee or silver (£3 = 10 taels) per 100 catties; thus the total quantity retailed—i.e. imported—may be said to be paid for with 56,000,000 taels, or £16,800,000, and one mace of prepared opium is consequently worth, say, about 3½d. (English). Divided by the number of days in the year, the quantity of prepared opium smoked daily may be said to be 3,068,413 mace, and the value 11,046,573d. or £46,027. Average smokers consume three mace of prepared opium, and spend about 10½d. daily. This quantity is the same as 6-15ths of an ounce avoirdupois, and suffices for from 30 to 40 pipes—i.e. whiffs, draws, or inhalations. If we divide the total number of mace consumed daily by the total quantity each average smoker consumes daily, we find that there are in round numbers above 1,000,000 smokers of foreign opium. The population of China is spoken of as amounting to more than 400,000,000, and may fairly be pronounced to be something above 300,000,000. Estimating the population at 300,000,000, and opium-smokers at 1,000,000, and proceeding with the calculation, the result is that 3½ in every 1000 smoke,—that is, that opium-smoking is practised by one-third of one per cent. of the population. In addition to the foreign drug, there is also the native product. Reliable statistics cannot be obtained respecting the total quantity produced. Ichang, the port nearest Sze-chuen, the province which is generally believed to be the chief producer and chief consumer of native opium, estimates the total production of native opium at 25,000 chests annually; while another port, Ningpo, far away on the coast, estimates it at 265,000 chests. Treating all such replies as merely so many guesses, there are, it is to be remarked, two statements which may be taken as facts in this connection: the one is that, so far as we know to-day, the native opium produced does not exceed the foreign import in quantity; and the other, that native opium was known, produced,

OPIMUM.

and used long before any Europeans began the sale of the foreign drug along the coast. Granting, then, that the native product equals the foreign import, and that 100,000 chests are produced annually, and granting also that this quantity, when prepared, provides 1,120,000,000 mace of prepared opium for the annual consumption of 1,000,000 additional smokers, the number of opium-smokers in China may be said to be in all 2,000,000, or two-thirds of one per cent. of the population. The native product sells for one-half the price obtained for the foreign drug, and may be estimated to be paid for with, say, £8,400,000 by 1,000,000 smokers, who spend about 5½d. a-piece daily. The total amount spent by China on this luxury produced at home and imported from abroad is thus, say, £25,000,000 annually.

Examined in this way, the results arrived at are that 200,000 chests, or almost 13,000 tons (1680 catties=1 ton), of unprepared opium are consumed annually by 2,000,000 opium-smokers; that these smokers expend £25,000,000 on opium; that this is an expenditure of, say, from 6d. to 11d. daily by individual smokers; and that all the smokers amount to only two-thirds of one per cent. of the population. If more than three mace a-piece is consumed daily by smokers, then smokers are less numerous; if less than three mace, then smokers are more numerous, and smoking individually less harmful. The truth is that many smoke more than three mace and many less, but from the statistical point of view it is safe to say that opium-smokers in China constitute simply two-thirds of one per cent. of the population. On the supposition even that the quantity of native opium produced is ten times that of the foreign opium imported, the total will not yet suffice for the consumption of even four per cent. of the population. Four per cent. is a small percentage, but in China it means 12 millions of people. It is hardly credible, however, that native opium is produced in such quantity; but whatever the number of opium-smokers may really be,—and allowing that many people smoke without injury,—there must in any case be a percentage of smokers for whom the habit works nothing but evil.

Chinese who have studied the opium question are opposed to a traffic which more or less harms smokers, now numbering, say, over two millions, and annually increasing; at the same time, they admit that opium provides a large revenue, that expenditure for opium and liability to the incidence of opium taxation touch an infinitesimally small percentage of the population, and that neither the finances of the State, nor the wealth of its people, nor the growth of its population, can be specially damaged by a luxury which only draws from 5d. to 11d. a-piece a day from the pockets of those who indulge in it, and which is indulged in by only two-thirds of one per cent. of the population. They admit all this, but they do not find in either the revenue produced or the statistical demonstration of its percentage innocuousness, any sufficient reason for welcoming the growth of the trade or for desisting from the attempt to check the consumption of opium.

The opium sold by public auction in Calcutta is termed 'provision' opium. This is mostly exported to China. But in addition to the quantity exported, about 4000 chests of Bengal opium are consumed in India. This is termed 'abkari.'

OPIMUM.

During the twenty years up to 1881, the annual average production of 'provision' opium was 50,154 chests, and in that period the price of crude opium varied from Rs. 4.8 to Rs. 5 a seer. The actual cost of a chest of Bengal opium, including interest on the capital and all indirect charges, is as follows:—

68 seers 2 chittak at 75° consistence, equals 73 seers at 70° consistence, at Rs. 5 per seer,	Behar. Benares. At 70°. Rs. 365 Rs. 341
Cost of manufacture and packing, interest on capital, charges for pensions, and leave allowances of officers,	71 66
	Rs. 436 Rs. 407

Being an average of Rs. 421.

The weight of a chest is 140 lbs. avoidupois. The average price realized on a chest of Bengal opium for the ten years ending 1880–81 may be taken at Rs. 1280; the average profit, therefore, may be taken at Rs. 1280 – 421 = Rs. 859. Malwa opium is a product of that native state, and as it passes through a British Indian port for shipment, the British Indian Government levies a duty on it of Rs. 700 a chest. The average number of chests of Bengal opium sold in the ten years up to 1880–81 was 49,337. But in 1881 the quantity being offered for sale was 56,400 chests. To secure a continuous supply of 56,000 chests of Bengal opium yearly, the Government of India maintain a reserve. The quantity so stored was in 1881 only 21,752 chests, while in 1878 it had been 48,482 chests.

The British Indian income from the opium monopoly is obtained by two principal means, namely, by a system of allowing the cultivation of the poppy by the natives of British India on account of Government, and by the impost of a heavy duty on opium grown and manufactured in foreign states, but brought in transit to a British port for exportation. The former system obtains in Bengal, the latter in Bombay. According to the statements published, Bengal opium yields a profit of 7s. 6d. per lb., whilst the duty levied in Bombay Presidency is only equal to a surplus of 5s. 8d. per lb.

The gross revenue, the expenditure charges, and the net revenue on account of opium in the Bengal and Bombay Presidencies from 1870–71 to 1880–81 are as under. The receipts from provision opium and the cost price of opium sold to the excise department are included. The receipts realized by the provincial governments on the sale of opium are not included.

	Gross Revenue.	Expenditure.	Net Revenue.
1871–72, .	£9,253,859	£1,596,646	£7,657,213
1872–73, .	8,684,691	1,814,268	6,870,423
1873–74, .	8,324,879	2,001,280	6,323,599
1874–75, .	8,556,328	2,341,282	6,215,046
1875–76, .	8,470,591	2,217,851	6,252,740
1876–77, .	9,122,428	2,841,644	6,280,784
1877–78, .	9,182,603	2,659,504	6,523,099
1878–79, .	9,397,762	1,697,792	7,699,970
1879–80, .	10,317,300	2,067,492	8,249,808
1880–81, .	10,479,942	2,028,757	8,451,185

The receipts by the Government of India, under the head of opium, include three items, viz. (1) the money realized at the Calcutta auction sales; (2) the receipts from the Malwa pass duty; (3) the cost-price money credited by the excise department to the opium department. For the ten years up to 1881, the re-sale under the excise

regulations, on account of the sale of Bengal opium, amounted to £381,000.

The revenue of British India from this source is doubtless a very serious amount to risk, but the following will show that it had risen with a bound since 1840, after the first war, and also possibly since steam-ships replaced the sailing clippers:—

	Gross Revenue.	Expenditure.	Net Revenue.
1800-01, . .	£372,502	£105,381	£267,121
1810-11, . .	935,996	96,188	839,808
1820-21, . .	1,436,432	135,726	1,300,706
1830-31, . .	1,841,988	319,964	1,022,024
1840-41, . .	1,430,499	556,222	874,277
1850-51, . .	3,795,300	1,044,952	2,750,348
1860-61, . .	6,076,759	918,467	5,758,292

The prices obtained for the opium have, as with other products, varied with the demand. Between 1850-51 and 1880-81, the average price per chest of Bengal opium realized in each year at the Government sales has ranged from between £74, 8s. and £184, 13s. 11d.; and as the chest contains 140 lbs., these prices rule from about 10s. 6d. to £1, 7s. the lb. avoirdupois.

The opium monopoly of the British Indian Government is deemed essentially necessary as a source of revenue, but in its present form is a protection of the most intense description. Licensed cultivators are permitted to cultivate the poppy, but the juice must be sold to Government at a certain fixed price. It is manufactured into opium in the Government factories at Patna and Benares, and then sent to Calcutta, and sold by auction to merchants, who export it to China.

This action of the British Indian Government in manufacturing and selling opium knowingly for the Chinese market has been stigmatized as forcing opium upon China against the action of its Government; and the opinion has been advanced that the importation of opium into China by Christian people throws obloquy on the Christian religion, and discourages the efforts of Christian missionaries; also that it is unworthy of a great Government to interfere in commercial matters by exercising the Bengal monopoly, and that it is to its discredit to make profit in this direct manner out of a traffic which is open to grave moral objections.

The monopoly of cultivation is undoubtedly intense, but it is replied that it is limited to certain districts in Bengal; and in the 575,263 square miles of territories of native princes, it is, so far as regards the British Indian Government, wholly free, the fiscal right of taxing it in transit being alone imposed. And it is now known that since many hundred years the poppy has been grown in China for its opium, which is being produced there in quantities in at least double the quantity exported from British India. It has been suggested that the British Indian Government should substitute an excise duty for its monopoly. But the British Indian opium keeps its place in China for its excellence, and under any excise system its position would undoubtedly be lost amongst the Chinese, its greatest consumers.—*Simmonds; Jour. Ind. Archip.* January 1848; *Les Anglais et l'Inde*, p. 251; *Powell's Handbook*; *Cameron; Tod's Rajasthan*, ii. p. 630; *M'Culloch's Dict.*; *O'Sh.*; *Smith's Mat. Med.*; *Bonnyng, America; Annals of Indian Administration; Williams' Middle Kingdom*, ii. pp. 286, 383; *Hooker's Him. Journal*, i. p. 83; *Malcolm's Central India*, iii. p. 45; *Crawford's Dict.*; *Mason's Tenasserim*; *Mor-*

rison's Compendious Description; *Royle's Mat. Med.*; *Dr. Impey on the Cultivation of Opium in Malwa*; *Dr. Little on the Opium Manufacture at Singapore*, in *Journal of the Indian Archipelago*; *Dr. Butler*, in *Journal Ben. As. Soc.* p. 136; *Mr. Caine*; *Mr. Edkins*; *Consul Gardner*; *Mr. Carnegie*; *Dr. Lyell*; *F. A. Fluckiger and Daniel Hanbury, Pharmacographia*, London 1874; *Sir Robert Hart, Inspector-General of Customs at Peking*; *Mr. J. Acheson's Report*; *Jameson's Edinburgh Journal*, 1819; *Medhurst's Far Cathay*; *Lockhart's Medical Missionary*; *Doolittle's Social Life*; *Muirhead's China*; *A. E. Moule's Essay on Opium*; *Experimental Culture*, 1874-76; *Behar Agency Report*, 1867; *Attacks of Heliothis armigera*, 1878; *Records, Finance Depart.* 1871; *Records of Government*, 1873; *Persia Consular Report*, 1882; *Parliamentary Papers*, 1882.

OPIUM-CLIPPER, a quick-sailing vessel, formerly employed in smuggling opium from India into China. The opium from India was stored in receiving ships, to be trans-shipped into opium-clippers equipped for fighting their way, and partly into Chinese craft; and it was by the latter that the smuggling was conducted, the proceedings of the opium-clippers being more in the way of a traffic at various points on the Chinese coast, carried on openly, and, where necessary, in open defiance of the Chinese authorities.—*Simmonds.*

OPLISMENUS, a genus of plants of the order Panicacæ. *O. Burmanni*, *Rom. and Sch.*, grows in Bengal, as also does *O. colonus*, *Kth.*, called in Bengali, Shama; cattle are very fond of it. Enormous islets of living water-grasses, as *Oplismenus stagninus* and other plants, float on the Megna river. *O. lanceolatus*, *Kth.*, and *O. strictus*, *Sch.*, are also Bengal plants. *Oplismenus stagninus* is cultivated in gardens at Kotah.

Oplismenus frumentaceus, *Roxb.*

Panicum frumentaceum, *Roxb.*

Damra-shama, . . .	BENG.	Samaka, . . .	HIND.
Shama,	"	Sanwak,	"

Several varieties of this grass are cultivated in British India; cattle are fond of it, and the seeds are wholesome and nourishing, and constitute an article of diet amongst the poorer people; in a good soil, it yields about fifty fold. In the Panjab it is a cultivated cereal, uncommon out in the plains except Cis-Sutlej, and common in places in the eastern part only of the Panjab Himalaya, but its grain is considered heating, and it is one of the poorer of the millets.—*Hooker; Gent. Med. Top.; Roxb.; Voigt; Stewart.*

OPOBALSAM, *Balsamum Egyptiacum*.

Akuyila-semun-i-rumi, AR.	Opobalsamo, . . .	IT.
Balisan, . . .	Egypt. Bals. verum album, LAT.	
Balm of Gilead, . . .	ENG. Judaicum de Mecca, "	
Balm of Mecca, . . .	Roughan-i-Balsam, PERS.	
Balsamier de la Meque, FR.		

Balm of Mecca is procured from the *Balsamodendron Gileadense*, a middle-sized tree growing in Arabia, also from the *Balsamum Berryanum*. There is but little of the true balm of Gilead which reaches Britain. The same may be said of another of the terebinthine resins, *B'dellium*, which is obtained from India and from Africa. The best *Opobalsamum* is obtained from the greenish liquor found in the kernel of the *Balsamum Berryanum*. An inferior quality of *Opobalsamum* is obtained by expression from the fruit of *Amyris Gileadensis* when the fruit is at maturity. The *carpobalsamum*

of the ancients was from the fruit of the *Amyris Gileadense*. It is a liquid gum-resin, obtained from the *Amyris Gileadensis*, a tree found in Arabia, Abyssinia, and Syria. It is first turbid and white; of a pungent smell resembling turpentine, but sweeter; and of a bitter, acrid, astringent taste. When old, it becomes thin, limpid, of a greenish hue, then of a golden yellow, and at length of the colour of honey. It is chiefly used as a cosmetic by the Turkish ladies.—*M'Culloch*.

OPOIDIA GALBANIFERA, of the tribe *Symnææ*; its gum occurs in commerce in agglutinated plastic masses. It is hot, acrid, and bitter, and in properties resembles *asafoetida*, but weaker.—*M'C.*; *Royle, Ill.*; *O'Sh*.

OPONE of Ptolemy, Cape Guardafui, the Jurd-Hafun or Gurd-Hafun of the Arabs.

OPOPONAX.

Jawashir, AR., H., PERS.	Opoponace, Ir.
Peh-chi-hiang, . . CHIN.	Gawaher, PERS.
Panax gumm., . . GER.	Opoponaca, Sp.

A gum-resin obtained from the stalks of *Opoponax chironium*, a tall plant. According to Pelletier's analysis, 100 parts contain—resin 42, gum 33, starch 4, extractive and malic acid 4, volatile oil 5, with traces of caoutchouc and wax, and 9 of woody fibre. The sp. gr. 1.622; with water it forms a milky fluid. *Opoponax* is derived from *ὄπος*, juice; *πας*, all; and *ἄκος*, a remedy,—meaning that it is a remedy for all diseases. In action it resembles *asafoetida*, but is much feebler. The plant occurs in dry fields in the south of Europe and Asia Minor. The milky juice which exudes from the root when wounded, hardens into a foetid gum-resin. Jawashir is imported into India from Arabia, and into England from Asia Minor. The resin is found in all the bazars of Bengal, and is even exported from British India to Europe. Jawashir in the bazars of Baghdad sells for 10½d. per lb., and is imported from Persia.—*O'Sh.*; *M'Cull. Com. Dict.*; *Powell*.

OPOSSUM of Australia is the *Phalangister vulpina*. The long-tailed flying opossum of Australia is the *Belidens flaviventris*. It is also called the flying squirrel, also the yellow-bellied flying phalanger. The opossum is the only marsupial which seems to hold its ground in the presence of animals of the old world. It is found throughout Australia, New Guinea, and the Moluccas, and has become more numerous in the settled districts of New South Wales than when the continent was first settled. This is probably owing to their taking up their abode in the forest trees, whence they also derive their food, so that they are not liable to the attacks of beasts of prey.

OPUNTIA, a genus of plants of the order *Cactaceæ*, several species of which have been introduced into British India, from the West Indies, Peru, and Brazil.

O. Brasilensis, *D.C.*, from Brazil, with large greenish-yellow flowers.

O. coccinellifera, *Haw.*, syn. of *Cactus coccinellifer* of S. America, with the petals bright rose-coloured at several seasons of the year. It is one of the plants employed in the W. Indies for rearing the cochineal.

O. curassavica, *Haw.*, syn. of *C. curassavicus*, *L.*, from Curaçoa, with large yellow flowers, 1½ inch across.

O. cylindrica, *D.C.*, syn. of *C. cylindrica*, *Lam.*, from Peru, with largish scarlet flowers.

O. Dillenii, *Haw.*, syn. of *O. Dillenii*, *Ker.*, and *C. Indicus*, *Roxb.*, from S. America, is the *Nagphana* of Bengal,

and the prickly pear of Europeans in India; wild cochineal insect thrives on this plant.

O. elatior, *Haw.*, from S. America, with large purplish-yellow flowers.

O. ficus Indica, *Haw.*, from S. America, syn. of *C. ficus Indica*, with large sulphur-yellow flowers.

O. leucantha, *Hort.*, *Berol.*

O. nigricans, *Haw.*, *D.C.*, *C. tuna*, *♀ nigricans*, *B.M.*, from S. America.

O. Roxburghiana, syn. of *C. Chinensis*, *Roxb.*

O. rubescens, *Salm.*, from Brazil.

O. triacantha, *D.C.*, from S. America.

O. tuna, *Haw.*, syn. of *C. tuna major*, *Roxb.*, from S. America, with large reddish flowers. It is the favourite food of the cochineal in Mexico and Brazil, and is the only species employed in the Canaries.

O. vulgaris, *Haw.*, syn. of *Cactus opuntia*, *L.*, Southern States of N. America, cultivated in Europe, where its fruit is called the Indian fig.

Dr. Fontana, in the Asiatic Annual Register for 1799 (reprinted in Pennant's Indian Recreations), mentions both the Manila and Chinese *opuntias*, and states that the cochineal insect cultivation was extended in Bengal; but in 1795 only 5 rupees a seer, and in 1797, 7 rupees a seer, were given for Bengal cochineal, when Mexican was selling at about 16 to 20 rupees. Dr. Fontana states the Bengal *Coccus sylvestris* contained only from 9—16 to 10—16 parts of the colouring matter contained in the Mexican, and the cultivation was given up.—*Roxb.*; *Royle, Ill.*; *Muller*; *Voigt*; *Eng. Cyc.*

ORA, a large tree of the Society Islands; from the bark a brown cloth is made.

ORACHE, or Mountain Spinage, one of the *Chenopodiaceæ*. Of these there are several varieties, commonly known as red and green sage; the leaves are slightly acid; both sorts are boiled as spinage, but the red is most esteemed. Propagated by seed; no particular soil required.—*Riddell*.

ORAKZAI, a Pathan tribe, residing in Tirah, intermingled with the Afridi, and some of them are found in the hills south of Peshawur. They are to be met with to the north-west of Kohat, near the Ilungoo valley. It was a malik or chief of this tribe who conducted Nadir Shah and a force of cavalry by the route of Chura and Tirah to Peshawur, when the principal road through the hills was defended against him.

ORANG, a Malay word meaning a people, a race.

Orang Baju, or Baju Laut, seafaring people.

Orang Binua, the people of the country, the aborigines. The Malay of the Peninsula often designate, by the term Orang Binua, the Udai, Jakun, Mintira, Sakai, and Besisi, the five tribes occupying the lands around the lofty Gunung Bernum, or Bernum Hill.

The Orang Binua of Johore occupy all the interior of Johore over which the Tamungong rules. They also possess the interior of the most southerly portion of Pahang. They occupy the upper branches of the rivers Johore (the Lingiu and the Sayong), Binut, Pontian, Batu Pahat or Rio Formosa (the Simpang Kiri, Pau, and Simrong, with their numerous affluents), and Indau (the Anak Indau, Simrong, and Made), with the country watered by them. By means of these rivers a constant communication is maintained between the families of the Binua on the two sides of the Peninsula. No Binua were found on the river Johore below the junction of the Sayong

and Lingiu. There are none on the Pulau; and the aboriginal families on the Tamrau and Sakodai, which fall into the old Straits of Singapore (Orang Sabimba) were, about A.D. 1840, imported by the Tamungong from the islands of Battam to the south of Singapore, for the purpose of collecting taban (gutta-percha). The river nomades (Biduanda Kallang or Orang Sletar) and the sea nomades (Orang Tambusa), termed also Orang Laut and Ryot Laut, people of the sea, etc., who lurk about the estuaries and creeks of the Johore, Libbam, and other rivers along the southern coast of the Peninsula, are distinct from the Orang Binua, and cut off from all communication with them. Binua have never been known on the upper part of the Sidili, although it has its source in the same mountains where the Johore and the Made rise. On the north-west they do not extend beyond the Simpang Kiri and Pau.

About half a day's walk from the source of the former rises an affluent of the river Muar, called Sungei P'ago, which gives its name to a tribe found on its banks and amongst the adjacent hills. The Binua describe the Orang P'ago as a wild race, naked, without houses, shunning all intercourse with the Malays, and having very little intercourse even with them. They are probably a secluded and rude branch of the Udai, or of the Jakun.

•Orang Gunong, people of the mountains, hill-men of Malay Peninsula and Banca.

Orang Gugu and Orang Kubu are two uncivilised races in the interior of Sumatra.

Orang Laut or sea-people, also called Ryot Laut, are similar in their habits to the Baju Laut, and are found upon the coasts of Borneo and Celebes; but, though belonging to it, they can scarcely be said to inhabit the island, for they live entirely in their little prahus, and sail about the coasts. They subsist principally by fishing, and it is said that they were always ready to give information to the piratical rovers. The arms of the Orang Laut are the limbing, or lance; the tampuling, a large hook; the kujore, a sort of spear with a very broad head, used in fishing; and the serampong, a sort of prong. In Borneo, three distinct tribes live in prahus, and wander about the shores of the island,—the Lanun from Magindanao, and the Orang Baju and Orang Tidong, source unknown. The Dyak are the Orang Binua, or aboriginal inhabitants of Borneo. They are scattered in small tribes over the face of the island, those inhabiting the banks of the large rivers being generally under the dominion of one more powerful than the rest; but the tribes which reside in the depths of the forests, where the communication between them is more difficult, are generally perfectly distinct from each other.

Orang Malayu is the Malay race.

Orang Menangkabau, the people of Menangkabau.

Orang Selat, the Cellates of Valentyn, men of the Straits of Malacca; Selat, MALAY, a strait. These seem the same with the Orang Sletar, originally, with the Biduanda Kallang, joint occupants of Singapore. They speak a Malay dialect with a guttural accent.

Orang Rawa, a people of Rawa, Raw or Ara in Sumatra, immediately to the north of Menangkabau, and penetrated by the large but scarcely navigable river Rakan.

Orang Selong, a maritime people of the Malay Archipelago.

ORANG UTAN, MALAY, lit. wild man, is the name by which the species of *Pithecus* (*Simia* of Linnaeus) are known to the people of Borneo and Sumatra, and also to Europeans. They live on the low flat plains of those great islands where the forests are densest and most sombre. The Bengal Asiatic Society's museum received from Sir James Brooke of Sarawak, seven skeletons of large adult orang-outangs; and Mr. Blyth distinguished from them the species *Pithecus Brookei* or *Mias rambi*, *P. satyrus* or *Mias pappan*, *P. curtus* or *Mias chapin*? *P. morio* or *Mias kassar*, *P. Owenii*. The different species of these animals do not appear to inhabit the same district; and seemingly *P. Owenii* represents, in the southern part of the great island, the *P. morio* of the northern part. Jerdon names only *Simia satyrus* and *Simia morio* as from Borneo and Sumatra.

P. satyrus of Geoffroy (*Simia satyrus* of Linnaeus) is the red orang. The muzzle is large, elongated, somewhat rounded anteriorly; forehead sloping backwards, slight supraciliary ridges, but strong sagittal and lambdoidal crests. Facial angle, 30°. Auricles small; twelve pairs of ribs; bones of the sternum in a double alternate row. Arms reaching to the ankle-joint. No ligamentum teres in the hip-joint. Feet long and narrow; hallux not extending to the end of the metacarpal bone of the adjoining toe; often wanting the ungual phalanx and nail. Canines very large, their apices extending beyond the intervals of the opposite teeth. Intermaxillary bones ankylosed to the maxillaries during the second or permanent dentition. Height under five feet. It is an inhabitant of the islands of Borneo and Sumatra.

The orang-outang occupies the third place from the highest in the animal kingdom, the gorilla being first, and the chimpanzee second. The most striking feature of the orang is its great size and general resemblance to man. The chest, arms, and hands are especially human-like in their size and general outline. Each individual differs as widely from his fellows, and has as many facial peculiarities belonging to himself, as can be found in the individuals of any unmixed race of human beings. The faces of the more intelligent orangs are capable of a great variety of expression, and in some the exhibition of the various passions which are popularly supposed to belong to human beings alone is truly remarkable.

The nest of the orang-outang consists of a quantity of leafy branches broken off and piled loosely into the fork of a tree. He usually selects a small tree, and builds his nest in the top; or he builds his nest low down, often within 25 feet of the ground, and seldom higher than 40 feet. It is usually 2 feet in diameter, and quite flat on the top. The branches are merely piled crosswise, precisely as a man would build one for himself were he obliged to pass a night in a tree top, and had neither axe nor knife to cut branches. Upon this leafy platform the orang lies prone upon his back, with his long arms and short thick legs thrust outward and upward, firmly grasping while he sleeps the nearest large branches within his reach. An orang probably uses his nest several nights in succession, but never after the leaves become withered and dry, no doubt

for the reason that the bare branches afford an uncomfortable resting-place.

The oranges of Borneo fight a great deal. All the old ones are covered with scars inflicted by the formidable canine teeth, which these animals use wholly for defence and offence, since they are fruit-eating, and hence do not employ them in chewing. Their effort is always to seize the arm or head of an enemy, and draw the fingers or lips into their mouth, instead of advancing their own heads to bite.—*Mr. Blyth in Ben. As. Soc. Journal; Jerdon's Mammalia; Mr. W. T. Hornaday in Proceedings Amer. Association.*

ORANGE, *Citrus aurantium*.

Naranj,	ARAB.	Madra narranji,	MALEAL.
Ch'ang, Kan,	CHIN.	Laranja,	PORT.
Apelsin, Pomerands, DA.		Pomeranezu,	RUS.
Orangen, Oranje,	DUT.	Naga-ranga,	SANSK.
Pomeranzen,	GER.	Swadoo naringa,	"
Narangi,	HIND., PERS.	Panneh dodang,	SINGH.
Arancia, Melarance, IT.		Naranja,	SP.
Jeruklegi,	MALAY.	Apelsin, Orange,	SW.
Limau manis,	"	Kiehli, Collungi, TAM.	TEL.
Jeruk manis,	"	Portakal,	TURK.
Jeruk japon,	"		

This is a native of India, being found in the forests on the borders of Sylhet, and also on the Neigherries and in Orissa, perhaps also in China. The Asiatic names for the orange and lemon also indicate the south and east of Asia as their native country.

The Sanskrit Naga-ranga and the Arabic Naranj are no doubt the Naranja (Spanish), Arancia (Italian), whence we have aurantium and orange; and those for the lemon are Sanskrit Nimbuka, Bengali Nibu, Hindi Nimu and Limbu. Also Persian and Arabian authors do not, as is their wont, give any Greek synonym of either; but of the citron, which is supposed to have been known to the Romans, they say that marseeska is the Yunani, and atrogba the Syrian name, neither of which terms have been traced.

The orange has been largely cultivated, and now includes as varieties, the common sweet orange, the Seville or bitter orange (*var. Bigaradia*), the Mandarin orange of China (*var. Nobilis, sub-var. Mandarinum*), the Tangerine (*var. Nobilis, sub-var. Tangerina*), *Citrus Bergamium*, *Risso*; *C. dulcis*, *Volkmaer*. The Shaddock (*C. decumana*) and Forbidden Fruit (*C. Paradisi*) are also sub-varieties. The rind and flowers of *C. Bergamium* yield the bergamote oil of commerce; and *C. Bigaradia*, *Duhamel*, yields the neroli oil, so delicious and costly as a perfume.

The orange tree attains a height of 16 or 20 feet, and, like others of the genus, bears the fruit at all ages at the same time with the flowers. Though a native of India, it does not ripen its fruit there until the winter, and hence has been able to travel so much farther north than others of its compatriots. The Coolee orange of China, the Ch'ang of the Chinese, is a large thorny tree, but there is also a small variety. Its fruit has a thin, yellow, closely adhering skin, and fine but rather sharp flavour; marmalade is made of the fruit. The kan or chii or sha-kan of the Chinese is the red-skinned variety, the *Citrus nobilis* of authors; its rind is connected with the endocarp by many loose threads. It grows in Central China, and its fruit is smaller and sweeter than that of the Coolee orange; it is used as dessert, and its peel is exported to Japan. In the Dekhan the

finest sorts are the cintra, cowlah, and a small sweet orange which grows on a tree more like a creeper. The principal method of culture is by budding, the stocks generally being either seedlings or cuttings from the sweet lime. The best cintra, with a thin close rind, is produced upon the seedling stock, and it is said that the fruit grown upon the sweet lime stock is generally loose and soft; this is very perceptible with some of the oranges. The best time for budding is in the cold season. In Tenasserim, the trees are often exceedingly prolific. A seedling planted produced in the ninth year more than two thousand oranges. In the island of St. Michael, in the Azores, a single tree has been said to produce 20,000 oranges fit for exportation.

The leaves are rather bitter, and contain essential oil. The fragrant oil of neroli is afforded by the flowers. The berries while unripe are gathered, dried, and turned in the lathe to the size of peas, and are used in issues on account of their fragrant odour. The rind or peel is bitter and aromatic, and affords a very useful stomachic tincture and syrup. The juice of the ripe fruit contains sugar, malic and citric acids, citrate of lime, mucilage, albumen, and gum. Like the lemon juice, it makes an excellent cooling drink, and is an invaluable specific in the treatment of scorbutic diseases. The fruit is eaten as a dessert, is candied, and is made into marmalade. When of a small size, the fruit which falls off is dried, and forms the Curaçoa oranges, employed in flavouring curaçoa. One variety of the orange fruit is in high estimation amongst the Tamil medical practitioners, who suppose that it purifies the blood, improves the appetite, and cures catarrh. The wood is only met with as an object of curiosity; it is of a yellow colour, but devoid of smell.

Orange Peel, Chin-pi, Hung-pi, CHIN.; Post-i-Turanj, PERS. This is the peel of the various kinds of orange fruit. It is used as a stomachic, stimulant, antispasmodic.

Orange Zest, or orange threads, the Kiuh-peh or Kiuh-lo of the Chinese, are the dried threads of the fruit that cover the pulp of the sweet orange, prolongations of the endocarp.—*Riddell; Mason; O'Sh.; Ainslie; M. E. J. R.; Tredgold; Royle, Ill.*

ORAON, a tribe in the northern and western parts of Chutia Nagpur proper, in the eastern parts of Sirguja and Jashpur, and scattered in Singbhum, Zangpur, Bonai, and Hazaribagh, all in the Chutia Nagpur province, also in Sumbulpore of the Central Provinces. In the Lohardagga district, which includes the whole of Chutia Nagpur proper, they number 362,480; in Sirguja, about 20,000; in Jashpur, 25,000; and diffused through the other districts mentioned above, employed in the tea districts, and in British colonies, about as many more. They were for many generations settled on the Rhotas and adjoining hills, and in the Patna district, and they have a tradition that when driven from the Rhotas hills, they separated into two great divisions; one of these moving to the S.E. formed a settlement in the Rajmahal Hills, and are now known as the Male or Rajmahali; the other sought refuge to the south in the Palamow Hills, and wandered from valley to valley in those ranges, till they found themselves in Burwai, a hill-locked estate in Chutia Nagpur proper. From there they occu-

pied the highlands of Jashpur, and formed the settlements in the vicinity of Lohardagga, on the Chutia Nagpur plateau, where they still constitute the bulk of the population. This tradition is borne out by the evident affinity in language and similarity in customs of the Oraon and Rajmahali; and though the latter do not acknowledge the relationship, their common origin may be considered as established.

The Oraon are now a good deal interposed between the Kharawa and the Mundah; but though the Kharawa and Oraon are in contact, they are very unlike in language, appearance, manners, and customs. Oraon settlements predominate in the western parts of Chutia Nagpur plateau, and each village group has its peculiar flag. The Oraon are known to the people of the plains as the Dhangar, but Khurnkh is the name by which they designate themselves.

The Oraon are a very small race, but well proportioned. The young men have light graceful figures, and are as active as monkeys. Those residing in isolated positions are generally black or dark and ill-favoured. They have wide mouths, thick lips, projecting maxillary processes, nostrils wide apart, no marked elevation of the nose, and low foreheads, though not in general very receding. The Oraon who dwell in mixed communities have more varied features, and colours softer, fairer, and pleasing when young, and improve in appearance with civilisation. The Oraon, according to Colonel Dalton, have more of the African type of feature, he has seen woolly heads amongst them; and the wild Oraon have almost an ape-like physiognomy, the Jashpur Oraon being the ugliest of the race, with very low foreheads, flat noses, and projecting cheek-bones, and approach the Negro in physiognomy; and in manner the Oraon are more like bright-hearted Negroes, are fond of gaiety, decorating rather than clothing their person; whether working or playing, always cheerful; and young Oraon boys and girls are intensely fond of decorating their persons with beads and brass ornaments, which they discard on becoming Christians. Oraon youths and maidens speedily acquire the songs and the dancing steps of the Mundah. The Oraon are more lively than the Mundah, quite as industrious, and the most active and nimble-footed of dancers. The Oraon have small, ill-built, untidy huts, in which the family reside. But they have in each village of old standing, a Dhumkuria, or bachelor's hall, in which all boys and unmarried men of the tribe are obliged to sleep. Any absentee is fined. In the Dhumkuria, also, is placed all the flags, instruments used in their dancing and other festivals, and in front of it is a clear circular space for the dancing ground. In some Oraon villages, also, the unmarried girls have a house to themselves, with an elderly woman to look after them; she has always a stick in hand.

There is no similarity between the language of the Oraon and that of the Mundah and their cognates. The Mundah is soft and sonorous, while the Oraon is guttural and harsh, and the Oraon language of the Rajmahal Hills and the Tamil have a near connection. The Male and Oraon languages are mainly Dravidian; and although the Male are now confined to the N.E. extremity of the Vindhya, where the Ganges washes and bends round the chain, and are

separated from the South Dravidian nations by the Kol, their language is more Dravidian than the Kol itself. The explanation is probably to be found in the circumstance of the Oraon and Male having originally formed an uninterrupted extension of the Gond tribes and dialects that extended from the Godavery to the N. extremity of the Vindhya. In villages east of Ranchee, wholly inhabited by the Oraon, the Mundah, not the Oraon, is the language spoken.

The present customs of the Oraon have been derived from the Mundah, and differ therefore from those of the Rajmahali people, whose isolated position has preserved their ancient ceremonies. The Oraon, when driven from the Rhotas Hills, brought with them to the plateau large herds of cattle, and implements of husbandry previously unknown to the Mundah. The Oraon have no gardens or orchards belonging to individual houses, but they have some fine trees, common property, within the village, and outside their groves of fruit-trees form a beautiful feature of Chutia Nagpur scenery.

The Oraon and the Mundah are in tribes, and both are exogamic, not marrying in their own tribe. Also the tribal or family names are usually those of animals or plants, and when such is the case, the flesh of some part of the animal or the fruit of the tree is tabooed to the tribe called after it. Thus the Tirki must not eat Tirki (young mice); nor the Ekhar, the tortoise head; nor the Kirpotas, the stomach of the pig; nor the Lakrar, tiger's flesh; nor the Kujrar, the oil from that tree, neither sit under its shade; and so with the kite, the crow, the eel, etc.

The young people form attachments, but the elders go through the form of selecting the bride already fixed on by the youth. The marriage ceremony represents their former custom of capture. The bridegroom's party comes to the bride's village in arms, real or imitation. The young men of the bride's village turn out, also armed, to repel the invasion, and, after a little show, a dance forms, during which the couple are each carried astride on the hips of a friend. A bower is constructed in front of the residence of the bride's father, into which the bride and bridegroom are carried by women, and made to stand on a curry-stone, under which is placed a sheaf of corn, resting on a plough yoke. Here the Sindurdan is performed, but carefully screened from view, first by cloths thrown over the young couple, secondly by a circle of their male friends, some of whom hold up a screen cloth, while others keep guard with weapons upraised, and look very fierce, as if they had been told off to cut down intruders, and were quite prepared to do so. The bridegroom stands on the curry-stone behind the bride, but in order that this may not be deemed a concession to the female, his toes are so placed as to tread on her heels. In the marriages of the Oraon, a public recognition that the couple have slept together is a part of the ceremony. Mundah and Oraon marriages as a rule are not contracted until both bride and bridegroom are of mature age, the young people often making love and suiting themselves.

Girls form sisterly attachments with each other; interchanging a flower, each becomes gui to the other. They speak of each other as my gui or my flower. Oraon girls in childhood are

tattooed with three marks on the brow and two on each temple. When about to grow up, they further tattoo themselves on the arms and back. Young men in the Dhumkuria burn marks on their forearms.

Immediately in front of the Dhumkuria is the dancing arena, called Akhra, an open circus about forty feet in diameter, with a stone or a post marking its centre. It is surrounded by seats for tired dancers or non-dancing spectators, and shaded by fine old tamarind trees, that give a picturesque effect to the animated scene, and afford in their gigantic stems convenient screens for moonlight or starlight flirtations. During the festive seasons of the year, dancing at the Akhra commences shortly after dark every night, and if the supply of the home-brew hold out, is often kept up till sunrise.

The Oraon worship the sun under the name of Dharmi, as the creator and preserver, and offer white animals to him in sacrifice. Dara, worshipped by the Oraon and Mundah of Chutia Nagpur, is a carved stick, stuck up where the great jatras are held, or in the village dancing-place, and is worshipped with much revel and wassail, with much drunkenness amongst the old, and dancing and love-making amongst the young.—*Dalton*, pp. 134, 198; *Campbell*, pp. 22, 39.

ORAZIO. Fra Orazio, a friar who travelled in Central Asia.

ORCHHA, also written Oorcha and Urchha, is also known as Tehri or Tikamgarh. It is a native state in Bundelkhand, between lat. 24° 26' and 25° 34' N., and long. 78° 28' 30" and 79° 23' E. There are some magnificent tanks in the country, many of them constructed by the ancestors of the ruling family. It is the oldest and highest in rank of all the Bundela principalities, and was the only one of them not held in subjection by the Peshwa. Orcha, its chief town, in lat. 25° 21' N., and long. 78° 42' E., is built on the banks of the Betwa. Dacoits obtain shelter in its dense forests.—*Imp. Gaz. vii.*

ORCHIACEÆ, the Orchidaceæ of *Lindl.*, the Orchis tribe of plants, comprising 7 genera and about 2000 species. Of these, there are about 1700 species in British India in the several divisions, viz.:

Arethuseæ, genera *anthogonium*, *pogonia*, and *vanilla*; 218 species.

Cypripedeæ, genus *cypripedium*; 23 species.

Epidendree, genera *arundina*, *bletia*, *cattleya*, *epidendrum*, *phaius*, *spathoglottis*; 153 species.

Malaxiæ, genera *aporum*, *bolbophyllum*, *calogynæ*, *oirhopetalum*, *dendrobium*, *eria*, *liparis*, *oberonia*, *octomeria*, *otochilus*, *pholidota*, *pleurophallis*, *stelis*, *triseæ*, and *Wallichiana*; about 390 species.

Neottie, genera *anoctochilus*, *goodyera*, and *zeuxina*; total, 270 species.

Ophryeæ, genera *habenaria*, *peristylus*, *platanthera*, and *satyrium*; total, 449 species.

Vandeæ, genera *acanthophippium*, *acropora*, *aerides*, *bifenaria*, *batemanii*, *brassia*, *camarotis*, *catesetum*, *cryptochilus*, *culanthe*, *cymbidium*, *cyrtopora*, *cyrtopodium*, *diercrypta*, *eulophia*, *geodorum*, *gongora*, *grammatophyllum*, *maxillaria*, *micropora*, *occeolades*, *phalanopsis*, *renanthera*, *succulabium*, *sarcanthus*, *Stanhopea*, *vanda*; total, 487 species.

Many of the Orchiaceæ have very beautiful flowers, and salep, which consists of bassorin, is obtained from a species of *Eulophia*. Orchidaceous plants are rare throughout the plains of Northern India, and in the Panjab. Only the

ubiquitous *Zeuxina sulcata* occurs generally, while *Eulophia* is found locally, and only one other was found in the Trans-Indus hills to 8000 feet. *Bolbophyllum*, species *B. auricomum*, *Careyanum*, *flexuosum*, *fuscescens*, *Jenkinsonii*, *serpens*, and *sunipia*, occur in Nepal, the Khassya Hills, Burma, and Tenasserim. The most highly valued of the orchid order among the Burmese and Karens, is the sweet-scented *bolbophyllum*, which Karen youths wear in the lobes of the ear, and maidens in their hair. It abounds in almost every part of the jungles, throwing down delicate straw-coloured racemes over the rough grey bark of old *lagerstroemia*. *Bolbophyllum Careyanum* is a common orchid in the vicinity of Moulmein, easily recognised by a long leaf at the apex of a false bulb, and by its small purplish flower. Many species of *dendrobium* occur in South-Eastern Asia and Australia. Dr. Wight in his *Icones* gives thirteen, Dr. Voigt names twenty-five, species of *Bolbophyllum*, and on the Tenasserim coast there are fifteen or more, viz. :—

<i>album.</i>	<i>Cambridgeanum.</i>	<i>macrostachyum.</i>
<i>alpestre.</i>	<i>candidum.</i>	<i>Paxtonii.</i>
<i>aureum.</i>	<i>calceolus.</i>	<i>pendulum.</i>
<i>barbatulum.</i>	<i>cœrulescens.</i>	<i>plerardi.</i>
<i>denudans.</i>	<i>clavatum.</i>	<i>pulchellum.</i>
<i>filiforme.</i>	<i>crumenatum.</i>	<i>pumilum.</i>
<i>graminifolium.</i>	<i>chrysanthum.</i>	<i>purpureum.</i>
<i>heterocarpum.</i>	<i>densiflorum.</i>	<i>ramosissimum.</i>
<i>Heyneanum.</i>	<i>flavum.</i>	<i>secundum.</i>
<i>humilis.</i>	<i>formosum.</i>	<i>stuposum.</i>
<i>Jerdonianum.</i>	<i>Gibsonii.</i>	<i>sulcatum.</i>
<i>aggregatum.</i>	<i>Jenkinsii.</i>	<i>terotifolium.</i>
<i>bicameratum.</i>	<i>longicornu.</i>	

On the Tenasserim coast is a *dendrobium*, the flowers of which are white, with a yellow lip, three or four inches in diameter, and exquisitely fragrant. The plant blossoms in March, and its flowers may be seen whitening under the emerald foliage of the groves for nearly six months of the year to the close of October. The Burmese call it the silver flower. Wight gives figures of *Epipactis carinata* and *Dalhousia macrostachya*. *Eria obesa* is one of the most abundant of Tenasserim epiphytes, but the flowers are small, and have little to recommend them. Wight gives figures of *Eria* epiphytes, *pauciflora*, *polystachya*, *pubescens*, and *reticosa*.

The genera *Eulophia*, *Orchis*, *Satyrium* are believed to produce the salep of commerce, a substance largely used as a restorative and as a dietetic. *Orchis mascula*, called early orchis, male orchis, and male fool's stones, grows plentifully throughout Europe, Northern Africa, Persia, and the temperate region of High Asia. In Persia the roots are washed and thrown into boiling water to remove the outer skin; they are then dried, strung on cords, and hung in the sun or in ovens until perfectly free from moisture. The dried bulbs, of the size of a cherry stone to that of an olive, are slightly transparent and of a horny colour; they are pounded, being soaked in cold water until they become soft, and then rapidly dried, and the powder is dissolved like other fecula, in water, milk, or broth, requiring sixty parts of liquid to one of fecula. It may be used for the same purposes as sago, tapioca, and arrow-root, and when good is an excellent diet article for convalescents, two drachms being sufficient for a meal for an invalid. *O. morio* of Great Britain, the meadow orchis, or female fool's

stones, and the *O. militaris*, or man orchis, also of Britain, all furnish the salep tubers. *Orchis biflora*, *O. commelinifolia*, *O. latifolia*, and *O. papilionacea* are also named. Dr. Royle was of opinion that the genus *Eulophia* furnished the salep of High Asia, Kashmir, and Afghanistan, the Himalaya, the Neilgherries, and Ceylon; and Dr. Bellew found an orchis at Hazara, four marches west of Kurram fort, at a height of 1000 feet, some of the tubers being almost as large as a walnut. Dr. Royle names *Eulophia vera* of the Himalaya, near the Jhelum, and *E. campestris* near the Kheree pass, as yielding salep. There are three kinds of salep known in the bazars of N.W. India, viz. Salep misri or Egyptian salep, the genuine salep of Kashmir; salep Kohi or salep Kabuli, the mountain or Kabul salep and Simla salep, and salep Hindustani, which is the worst kind.—*Mason; Eng. Cyc.; W. Icones; Voigt; Roxb.; Hooker*, ii. p. 281.

ORCHILLA WEED, Orchella, Archil.

Purpermos, . . . DUT.	Orsella, POR.
Orseille, . . . FR., GER.	Orchilla, SP.
Orieello, Orceella, . . . IR.	Orselj, Orsilja, . . . SW.
Rocella tinctoria, . . LAT.	

A lichen of a grey colour; grows in the Cape de Verde Islands and Canary Islands, Madeira, Azores, Porto Santo, from which is obtained the dye called Orchil or Archil, by maceration in urine or other ammoniacal liquid.—*Bennett*, p. 27.

ORDEAL. *Divya, SANSK.* The earliest mention of the trial by ordeal is contained in the 5th chapter of the book of Numbers, from the eleventh verse, in which the priest gave holy water to a woman to drink, imprecating her with a curse, that if guilty, her thigh should rot and her belly should swell. Trial by ordeal, though forbidden by the Koran, is to be found in some form or other throughout the Muhammadan world. In Sind it is called Toro, and there are several forms in which it is practised. In Hinduism ten ordeals were recognised:—

1. Tola, the balance.
2. Agni, fire.
3. Jala, water.
4. Visha, poison.
5. Kosha, drinking water in which an idol has been washed.
6. Tandula, chewing grains of rice.
7. Tapta masha, taking a masha weight of gold out of heated oil.
8. Phala, holding a hot ploughshare.
9. Dharma, drawing concealed images of virtue and vice out of a vessel filled with earth.
10. Tulasi, holding the leaves of the holy basil, sacred to Vishnu.

Even now, in trivial cases, a few grains of rice that have been weighed with the saligrami are put into the mouth of the suspected or accused person, who is to chew them and spit them out on a pipal leaf. If the person be innocent, the grain appears as if stained with blood, or simply moistened with the natural saliva; if guilty, the rice is dry. In the trial by Kosha, or image water, the accused person drinks some of the water with which an idol has been washed, and if the accused survive free from calamity through the next fortnight, he is innocent. Also in an idol ordeal, two images, one called Dharma or Justice, the other Adharma or Injustice, are placed in a jar, and the accused is allowed to draw. If Dharma image be withdrawn, he is innocent. The ordeal of the balance is applied to women, children, the aged,

blind, lame, and sick men, and to Brahmans. After a fast of twenty-four hours, both of the accused and the priest, the accused bathes in holy water, prayers are offered up, and oblations are presented to fire. The beam of the balance is then adjusted, the cord fixed, and the accuracy of the scales ascertained. The accused then sits in the scale, and, while being weighed, the priests prostrate themselves, repeat certain incantations, and, after an interval of six minutes, the paper with the writer's accusation is bound around the head of the accused, who invokes the balance thus: 'Thou, O balance, art the mansion of truth; thou wast anciently contrived by the deities: declare the truth, therefore, O giver of success, and clear me from all suspicion. If I am guilty, O venerable as my own mother, then sink me down; but if innocent, then raise me aloft.' The accused is then re-weighed; if he then weigh heavier, he is found guilty, but if lighter, he goes free.

In the trial by fire, the accused, in India, walks barefoot into a heap of burning pipal leaves (*Ficus religiosa*); in Siam, over a pit filled with burning charcoal.

In the ordeal by boiling oil, the accused has to thrust his hand into the scalding fluid.

The hot iron ordeal is practised among Hindus, and the Buddhists of Pegu and Siam. Nine circles are drawn, each sixteen fingers in diameter, and each the same distance of sixteen fingers apart. The hands of the accused are rubbed with unhusked rice (paddy), and all marks on them carefully noted; seven pipal leaves are then bound with seven threads on each hand, and saying these words: 'Thou, O fire, pervadest all beings; O cause of purity, who givest evidence of virtue and of sin, declare the truth in this my hand.' The priest gives him a red-hot ball to carry as he steps from circle to circle, keeping his feet within each, until he reach the eighth, when he throws the ball on a heap of dry grass inside the ninth. If his hands, which are then examined, be not burned, he is pronounced innocent.

In Japan, a reputed thief bears on his hand a piece of thin paper having the figures of three deities. On this a piece of red-hot iron is placed, and if his hand escape, he is pronounced free.

Hot oil was a test in the Kandy country by claimant and defendant, and the one whose fingers are burnt loses.

The water ordeal is in vogue in India, in Burma, and in Borneo. In India, the accused stands in water nearly up to his waist, attended by a Brahman, staff in hand. A person near shoots three arrows from a bamboo bow, and a man hurries to pick up the furthestmost shaft. As he takes it from the ground, another person runs towards him from the water's edge; at the same moment the accused grasps the Brahman's staff and dives beneath the water. If he remain there till the two arrow-fetchers return, he is innocent, but if any part of his body appear, he is guilty. In Burma, a stake is driven into the water; the accuser and accused take hold, and together plunge beneath the water, and he who remains longer submerged is declared to have truth on his side.

In the poison ordeal, white arsenic and butter in a mixture is administered.

In the snake ordeal, a cobra and a ring are placed in an earthen pot, and the accused has to withdraw the ring.

The Borneo Dyaks place two pieces of salt in the water, to represent the accuser and accused, and the owner of the piece dissolving the first loses the cause. Also, two shells are placed on a plate, and lime-juice squeezed over them, and he whose shell moves first is pronounced guilty or innocent, as may have been resolved on. But the more common mode amongst the Dyaks is for the accuser and accused to plunge their heads beneath the water, and he who remains the longer is free.

The Brinjari people use the branch of a nim tree, the *Azadirachta Indica*. A husband throws it on the ground, and, turning to his wife, says, 'If thou be a true woman, lift that nim branch.'

In land disputes amongst the Hindus, in the gola or ball test, one of the parties, or a third person, carried a red-hot cannon ball along the alleged boundary, his palms being protected by a layer of pipal leaves. If he remain unscorched, the alleged boundary is determined to be correct.

In the ch'haur ordeal the referee walked the boundary with raw cowskin on his head; this was often strengthened by the imposition of a term twenty-one days, thirty days, etc., and was contingent on the referee's survival for that time.

In other cases, an oath, Kasm sat'h lasi, was administered, and the taker walked twenty-one paces with Ganges water, tulsi leaves, the saligram, and the book of Durga in his hands; if he survived twenty-one days, the truth of his statement was deemed established.

The truth of a man's assertion is still often tested by his being asked to repeat it standing in the waters of some tank of peculiar sanctity, as that of the Lachman Kund in Ajodhya.

Eating paddy, praying imprecations on themselves, is another form in Kandy; also eating a cocoanut in the same manner; drawing white olas is a third. Striking the earth, the repolle or red-hot iron, and the cobra put into an earthen pot with money, when the parties withdraw the money; if either be bitten, he is esteemed guilty.

Arrows are sometimes used in North-Western India as tests of innocence. The opposite ends of two arrows are held by a rattan laid upon the hands by two persons placed opposite to each other; they are parallel to and just sufficiently apart to allow of the suspected person's hand being held between them. The ends of the arrows merely rest upon the fingers. The arrows are supposed to move towards and close upon the guilty hand.

On the coast of Africa, all criminal charges are tried by the Pynin or judges, who hear and weigh the evidence produced. But if there be no evidence, the cause is decided by a form of ordeal called doom, which consists in administering to the person accused a certain quantity of the bark of a tree deemed poisonous. If he retain it on his stomach, he is pronounced guilty, if otherwise, innocent. The refusal to submit to this ordeal is considered as a decisive proof of guilt, and the judges proceed accordingly.

In Baatar, the leaf-ordeal is followed by sewing up the accused in a sack, and letting him down into water waist deep; if he manage in his struggles for life to raise his head above water, he is finally adjudged to be guilty. Then comes the punishment. The extraction of the teeth, which is

said in Baatar to be effected with the idea of preventing the witch from muttering charms; but in Kamaon the object of the operation is rather to prevent her from doing mischief under the form of a tigress, which is the Indian equivalent of the loup-garou.

The ordeal beans of Old Calabar, West Africa, are the seeds of *Physostigma venenatum*.—*Capt. Burton's Scinde; Wilk's Mysore; Hindu Infanticide; Williams' Story of Nala; Fourth Report of the African Institution; Letter from Mr. Meredith on the Gold Coast, December 1809; Asiatic Researches; Ward's Hindoos.*

ORDINARY WORKS, a revenue term in British India applied to public works executed out of ordinary revenue.

OREODOXA OLERACEA. *Endlich.*
Areca oleracea, Jacq. | Euterpe caribaea, Spreng.

Edible cabbage tree, . . . ENO.

A palm of the W. Indies, one of the *Cococææ*. The green top of the trunk is eaten in the W. Indies both raw and cooked. It has been introduced into India. *Oreodoxa regia, Humb. and Bonpland, Oenocarpus regius, Spr.,* is a palm of Cuba, in the vicinity of Havana. It has been introduced into India.

OREOSERIS LANUGINOSA. *D.C.*

Chaptalia gossypina, Royle.

Kafi,	BEAS.	Poorjloo,	RAVI.
Bur, Buzh, Kapfi, CHENAB.		Bujlo, Kapfi,	"
Pat-patoola,	JHELM.	Kufra,	SUTLEJ.
Kho,	KANGRA.	Khare-booti,	TR-INDUS.

Common in the Himalaya up to the Indus, and found in the hills beyond it, from 3200 to 7000 feet. Wherever it grows in any quantity, tinder and occasionally moxas appear to be made from it, sometimes by beating up the body of the leaf with the tomentum on its under-surface, as is done with some other plants, but generally by breaking through the former, and tearing off the latter, to be used alone. Cloth is said to have been made from this, but Dr. Stewart nowhere found such to be the case in the Panjab Himalaya. The plant is quite small, and does not grow closely, so that a wide area would need to be searched to get any considerable quantity of the tomentum; and the process of removing the latter is a tedious one, and would probably be costly.—*Dr. J. L. Stewart.*

ORFA, lat. 37° 10' N., the capital of a province in Asiatic Turkey of the same name, on the banks of the Kara Koyi, 90 miles S.W. from Diarbakr. The inhabitants, 30,000 in number, are Turks, Arabs, Armenians, Jews, and Nestorians. On a mountain which overlooks the citadel is a ruin which the Arabs call the palace of Nimrud, with several extraordinary subterranean apartments of great antiquity. It is that part of Mesopotamia which contained the Haran of Abraham, is the Osroene of the Romans, and the Edessa of the crusades. It subsisted for 843 years as an independent kingdom, when Caracalla led Abgarus, its last king, in chains to Rome. It was taken from the emperor Heraclius by Yezd, was retaken in the first crusade by Baldwin, brother to Godfrey of Bovillon, and erected into a Christian principality under one of the branches of the house of Courtney, who were expelled by Zingi, the Atabeg, A.D. 1145. It was included in the empire of Salah-ud-Din (Saladin), and subsequently conquered by the Turks. The capital was called

Edessa by Alexander's successors, and subsequently known as Rhoa.—*MacGregor*.

ORGANJ, Urghanj, or Jarjaniah, formerly the chief city of Khwarazm, the country now known as Khiva. It stood on both banks of the Oxus, with a bridge connecting them. It was the scene of awful devastation and massacre by the Mongols under Chengiz in 1221, and a hundred thousand of the only class spared, the artisans, are said to have been transported to Mongolia.—*Yule, Cathay*.

ORIENTAL, a term in use, in philology, to indicate a class of languages; in geography, it is applied broadly to Asiatic countries east of Europe, but in a more restricted sense to the East Indies or the countries now known as British India. In mineralogy, it is applied to precious stones, the violet oriental amethyst, the green oriental emerald, the red oriental ruby, the blue oriental sapphire, the yellow oriental topaz, all variously coloured varieties of corundum. The oriental amethyst is of a purple colour, and is an extremely rare gem. Its colour can be destroyed by heat, and its purity then resembles that of the diamond. These stones are all found abundantly in the Peninsula of India, but not of great beauty; the ruby of the N.E. of Burma, however, is the true oriental ruby. They are all distinguishable from the other gems of the same names which have not the prefix oriental, by their greatly superior hardness and greater specific gravity. Oriental sapphires are found in gravel and sand in the island of Ceylon and in Pegu, but oriental emerald is the rarest of all the green varieties of corundum.

Oriental languages is a term applied to all the languages of Asia, whether of the Aryan, Semitic, or other class. Formerly, the term meant little more than Hebrew, Arabic, and Persian; it now includes almost every language that is spoken east of Europe.—1. The Semitic, including old Semitic, new Semitic, and cuneiform writings; 2. The Indo-European (or Indo-Germanic, as it is called in Germany), including all Aryan languages, and comparative philology; 3. The African, including Egyptian; 4. The East Asiatic, or Ural-Altaic. With all the oriental languages those who would acquire them encounter their first difficulty in the variety of writing characters in use; and a second difficulty in the discordant manner in which, when a foreign character is used, or indicated by foreigners, the powers of the letters are employed. One mode put forward by Sir William Jones, about the year 1788, was an analogous classification of the letters; another proposed by Dr. John Borthwick Gilchrist, in the early part of the nineteenth century, was the representation of the sounds of the vernacular letters by equivalents of similar enunciation according to the powers of the letters as given by the English people; in other words, the one principle is analogy, the other pronunciation. The latter principle is well adapted for expressing the oriental characters in English letters in such a manner that English readers unacquainted with the oriental characters would be enabled to articulate the words with a very near approach to their correct pronunciation, but it is for the most part unsuitable for all others of the European nations who use the Roman letters. The principle of analogy adopted by Sir William Jones retains the original letters with certain

distinguishing marks, and permits the learned men of all Europe to follow the word to its source, and it has been generally followed by the learned. The most recent writer on the subject was Professor Horace Hayman Wilson in his Glossary, and he considered that the characters in the English alphabet had enabled him to represent letters in nine alphabets of thirteen different languages of British India. But to do this he had, by diacritic points and marks, and by compound letters, increased the English alphabet from 26 to 70 characters, 19 of the English letters having two to six forms, b, c, e, i, j, o, p, and u, each two; g, h, and l, each three; d and k, each four; a, r, s, t, and z, each five; and n has six forms; and he has even recommended other additions.

ORIGANUM NORMALE. Don.

Mirzan-josh, ARAB., HIND. | Marjoram, . . . ENG.
This herb grows commonly in the Panjab Himalaya from 2500 to 10,500 feet. Aitchison states that in Lahoul it is eaten as a pot herb.

Origanum vulgare, L., common marjoram.
O. decipiens, Wall. | O. stoloniferum, Bess.
O. orientale, Mill.

Baklat-ul-jezal, Suttur? AR. | Agroriganos, Gr. of Diosc.
Origanon melan, . . . GR. of Oushaeh? . . . PERS.
Theoph. | Mridu-maruramu, TEL.

An ornamental and aromatic plant, a native of Great Britain in dry uncultivated places, and of Europe, north of Africa, and of Middle Asia and America. It yields what is sold as oil of thyme in the shops, a common remedy for toothache, and frequently mixed with olive oil as a stimulating liniment against baldness, in rheumatic complaints, and against strains and bruises. The dried leaves used instead of tea are very pleasant; they are likewise employed in fomentations. The essential oil is so acrid that it has been used by farmers as a caustic.—*Eng. Cyc.*; *Dr. J. L. Stewart, M.D.*

ORIOLE is the popular name of several birds having their plumage of a golden-yellow mixed with black. In British India, the orioles are called the mango birds, from their yellow colour resembling that of the mango fruit. There are several species in the E. Indies. Oriolus kundoo, *Sykes*, extends over the whole of British India up to the base of the Himalayas. It lives in large groves of trees, gardens, and avenues, and feeds chiefly on fruits. Its call is a loud mellow whistle resembling pee-ho, and its French name of Lorient answers to its call. O. Indicus, *Brisson*, the black-naped Indian oriole, is rare, though spread throughout India, Arakan, Pegu, Tenasserim, and Malacca, and is more confined to the forest regions. O. melanocephalus, *Linn.*, the black-headed oriole, inhabits the forests, gardens, and groves of Central India, Bengal, Assam, Burma, and the Malay Peninsula; it is a lively and noisy bird, constantly flying from tree to tree, and uttering a loud mellow whistle. This oriole, famous in Indian poesy, is one of the most numerous of Tenasserim songsters. It comes to the garden at early dawn, when its rich mellow notes are heard pealing far through the mango bowers. It is a large yellow bird, with a black head, easily recognised. In Burmese it is called Hgnet-wa, or yellow bird. O. Ceylonensis, *Bonaparte*, occurs in Ceylon and the southern part of the Peninsula of India.—*E. L. Layard in Tennant's Ceylon*, p. 241; *Mason; Jerdon*.

ORISSA, a province of British India, which was occupied in September and October 1803, with Behar, Chutia Nagpur, Bengal proper, and Chittagong, and is under the administration of the Lieutenant-Governor of Bengal. It is at the head of the Bay of Bengal, at its western side, and lies between lat. 19° 28' and 22° 34' 15" N., and long. 83° 36' 30" and 87° 31' 30" E., with an area of 23,901 square miles, and, in 1872, a population of 4,317,999, partly in the deltas of the river Mahanadi on the south, the Brahmany in the centre, and the Baitarani on the north, and in part in 17 mahals or states which are tributary to the British, and cover an area of 16,218 square miles, and a population of 1,283,309. Orissa table-land rises on the southern side of the Mahanadi, in some places to 1700 feet, backed by the chain of E. Ghats, Amarkantak, jungle table-land, lat. 22° 40' N., long. 81° 5' E., 3500 feet. Its delta is fertile; its rivers discharge 2,760,000 cubic feet per second in time of floods, and it has a rainfall of 62½ inches; but it has suffered from floods and from droughts. There was a great famine in 1770, aggravated by the ravages of mutinous Marhatta soldiers. In 1823, a cyclone and storm-wave swept the coast; in 1834-35 and 1837-38, a famine was caused by inundations, and it suffered severely in 1866-67 from deficient rains.

A special inquiry into the mortality caused by the famine in Orissa in 1865-66 was made by deputy collectors, with the aid of corrected returns made by the zamindars. The total population in 1865 was 3,015,826; of these, 814,469 perished, and 115,028 either emigrated or disappeared, making a total loss of 929,497, and leaving 2,086,329 surviving. The percentage of deaths to population was 27, which, added to 3·81, the percentage of emigrants or missing, gives a general percentage of 30·81 as loss of population during the famine. In 1866 a great flood inundated 1052 square miles of the delta. In October 1831 the sea made a breach in the road which passes through the province from north to south, where it is nine miles from high-water mark. All having life—human beings, cattle, wild beasts, etc.—were drowned, and left in heaps eight and ten feet high against the road. This was north of Balasor. South of Balasor, late in the evening, said the sole survivor of a village, the wind was very strong on shore, and the tide rising. Several of the inhabitants went down to the beach. Those who had witnessed the storm of 1823 proposed to go inland; the younger ones would not believe that the sea could harm them, and voted for remaining. All were drowned except one, who was up in the tree under which we were standing, and twice the sea went over him. When he came down, all was dry, but, as he expressed it, not a cat left. In this hurricane 22,500 were drowned in half an hour, and several thousands more died of starvation and exposure. There was another hurricane in 1832, but the wind was off shore when most violent, and no lives were lost. These calamities induced the British India Government to endeavour to prevent their recurrence. The seven rivers—Mahanadi, Brahmany, Ryturmi, Lahundi, Borabahiny, Subunreka, and the Comya—are all more or less deltaic in character, and in the case of four rivers almost form one delta during the floods. The point before the engineer was to husband the water that came

down at the south-west monsoon, and distribute it so as to save the districts from droughts, from which Orissa has suffered so terribly. At the same time protection against the floods was to be secured. The area of land to be taken up for the scheme comprised the five alluvial districts contained between the frontier in the district of Ganjam and the Hoogly near Calcutta,—in all about 6000 square miles. The operations began in 1862, and much has been effected.

Bhuiya, Bhumij, Bathudi, Gond, Kandh, Khaira, Kol, Pan, Santhal, Savara, and others, form about a fourth part of the population, mostly in the mountainous jungle tract of Morbhanj, Keunjhar, and Bod, and 75,531 are in the tributary states. A record in the Uriya language, preserved in the temple of Jaganath, called the Vansavali and Raja Charita, and supposed to have been commenced in the twelfth century, after the usual detail of the mythology, and of the early kings of India down to Vikramaditya, gives as the first sovereign of this kingdom, in A.D. 142, Bato Kesari, who commenced the Kesari Vansa or Kesari dynasty. After an interregnum of 146 years, during which the Yavana reigned, the Kesari Vansa dynasty was restored in A.D. 473 by Jajati (Yayati) Kesari, capital Jajpur. He was a warlike and energetic prince, but it is not known who he was or whence he came. He was the founder of the Kesari or Lion line, which ruled Orissa until A.D. 1131. The Ganga Vansa dynasty commenced with the invasion of Churang, Saranga Deva, or Chor-ganga, and ended with Raja Narsinh-deo, who in 1277 built Kanarak, the Black Pagoda. The Surja Vansa rajas then reigned from 1451 to 1550. After them came the Zamindari races, Khurda rajas or Bhui Vansa, from 1580 to 1804, when Mukund-deo was deposed by the British.

Buddhism for ten centuries prevailed in Orissa, but its only traces are to be found in the cave dwellings and rock habitations of the priests and hermits, and in recently deciphered inscriptions. Their principal settlement was at Khandgiri, about half-way between Puri and Cuttack. The Snake, Elephant, and Tiger caves here (see Udayagiri), and a two-storeyed monastery, known as the Queen's Palace (Rani-Nur), are the most interesting excavations. They form relics of the three distinct phases through which Buddhism passed. The first, or ascetic age, is represented by the single sandstone cells, scarcely bigger than the lair of a wild beast, and almost as inaccessible; the second, or ceremonial age, is shown in the pillared temples for meetings of the brotherhood, with commodious chambers for the spiritual heads attached to them; the third, or fashionable age of Buddhism, reached its climax in the Queen's Palace, adorned with a sculptured biography of its founder. General Cunningham believes that the kingdom of U-cha, or Oda, spoken of by Hiwen Thsang, corresponds exactly with the modern province of Odra or Orissa. In the time of that Buddhist pilgrim, the province was 7000 li or 1167 miles in circuit, and was bounded by the great sea on the south-east, where there was a famous seaport town named Che-li-ta-lo-ching, or Charitrapura, that is, the 'town of embarkation' or 'departure.' This General Cunningham supposes to have been the present town of Puri, or 'the city,' near which stands the famous temple

of Jaganath. Outside the town there were five contiguous stupa with towers and pavilions of great height, and he supposes one of these to be that which is now dedicated to Jaganath. The three shapeless figures of this god and his brother and sister Baladeva and Subhadra, are simple copies of the symbolical figures of the Buddhist triad, Buddha, Dharma, and Sangha, of which the second is always represented as a female. The Buddhist origin of the Jaganath figures is proved beyond all doubt by their adoption as the representative of the Brahmanical avatar of Buddha in the annual almanacs of Mathura and Benares. The political limits of Orissa under its most powerful kings, are said to have extended to the Hoogly and Damuda rivers on the north, and to the Godavery on the south. But the ancient province of Odra-desa, or Or-desa, was limited to the valley of the Mahanadi and to the lower course of the Suvarna-riksha river. It comprised the whole of the present districts of Khatak (Cuttack) and Sumbulpore, and a portion of Midnapur. It was bounded on the west by Gondwana, on the north by the wild hill states of Jashpur and Singhum, on the east by the sea, and on the south by Ganjam. These also must have been the limits in the time of Hiwen Tshang, as the measured circuit agrees with his estimate. Pliny mentions the Oretes as a people of India in whose country stood Mount Malena; but in another passage he locates this mountain amongst the Monedes and Suari. and in a third passage he places Mount Mallus amongst the Malli. As the last people were to the north of the Kalinga, and as the Monedes and Suari were to the south of the Palibothri, the Monedes and Suari must be the Munda and Suar, and the Oretes must be the people of Orissa. Malle is one of the Dravidian terms for a mountain; and as the Oraon, or people of West Orissa, still speak a Dravidian dialect, he thinks it probable that Mallus was not the actual name of the mountains, but may have been the famous Sri-Parvat of Telingana, which gave its name to the Sri-Parvativa Andhras?

The Uriya are Brahmanists, and inhabit the plains and valleys in the western tracts towards Cuttack; the Kol to the northward, also called Ho; the Kandh in the central part, and the Saura in the south. These three last-named races believe themselves to be the aborigines of the districts they now inhabit, and of others more extensive of which they have been dispossessed by the encroachments of other tribes. The Kol are faithful, honest, and of happy, ingenuous dispositions, as strikingly contrasted with the trickery and falsehood of the Hindu; they are hospitable, but very irascible, and so prone to feel injuries acutely, that they frequently vent their resentment or grief in suicide, to which this untutored people are terribly addicted. The Kandh inhabit the central part of Orissa, and until the middle of the 19th century they practised the barbarous Meriah sacrifices, to propitiate the deity of the earth by the slaughter of human victims, generally children stolen from neighbouring districts, and purchased by the Kandh race for sacrifice, as no Kandh can be sacrificed, and no victim was held acceptable unless purchased. The ceremonial differed somewhat. But at the period appointed by their priests a solemn feast was held, lasting two days and nights, which time was passed in the most

revolting drunken obscenity. On the third day the hapless victim was brought out, and bound to a stake. The victim's limbs were first broken, and, the priest having given the coup de grace with an axe, the whole set upon it and hewed the quivering body piece-meal, each striving to carry away a bloody fragment to throw upon his own field. The British Government exerted itself successfully to suppress this sanguinary rite, to which the Kandh adhered with obstinate pertinacity.

The Saura, who inhabit the southern part of the province, have the same superstitions as the Kandh. They are even more savage and barbarous; so much so, indeed, that a Saura is said to have no hesitation in depriving a human being of life for a very trifling consideration, or at the command of his chieftain.

Amongst the Uriya race high cheek-bones seem to prevail, with good features and straight hair. Amongst the customs peculiar to this province, Dr. Hunter says, is one that, if a man die childless, his brother, if he have one, must marry the widow. The Brahmins of Orissa differ from all other Brahmins, in some respects as regards their food, and a great many obtain their livelihood as cultivators; they also trade, and follow the occupations of brickmakers, bricklayers, etc.

The Pana of the frontier and south of Orissa are a wild predatory tribe.

The Juanga are a forest race, and until 1871 the sole dress of their women consisted of bunches of leafy twigs. They are also called Pattooh.

Hindol, one of the tributary states, of 312 square miles, and 28,025 inhabitants, mostly aborigines semi-Hinduized. Of these the Taala number 1622; the Kandh, 1611; and Pan, 3680; 18,854 Khassa, Brahmans, and Khandaits, following Hinduism.

Uriya or Ooriah is the language of Orissa, and the country takes its name from the Or or Ordu tribe, who seem to have come from the N.W. In the Orissa district they appear to have had very narrow limits, viz. along the coast line from the Rusikulia river near Ganjam northwards to the Kans river, near Soro, in lat. 21° 10'; but in the process of migration and conquest under the Ganga Vansa dynasty, the limits of Orissa (Ordessa) were extended to Midnapore and Hoogly on the north, and Rajamundry, on the Godavery, on the south. The Uriya tongue is a tolerably pure dialect of Bengali. About Ganjam, the first traces of Telugu or Telung occur, though the Uriya still prevails forty-five miles south of Ganjam, on the lowlands of the sea-shore, beyond which Telugu begins to predominate. At Chica-cole, Telugu is the prevailing language; in Vizianagram, Telugu is only spoken in the open country, and Uriya in the mountains runs farther down to the south. Telugu is spoken to within 45 miles south of Ganjam, and at Ganjam Telugu ceases. On the coast line Uriya continues in the direction of Bengal as far as the Hijli and Tumluk divisions on the Hoogly. On the western side of the Midnapore district, it intermingles with Bengali near the river Subunreka. To the westward, the Gond and Uriya languages pass into each other, and at Sonepur, half the people speak the one and half the other language.

The temples at Orissa are more numerous than those of all Hindustan. They were erected between the years A.D. 500 and 1200. That at

Bhuvaneswara was A.D. 637; that at Puri was A.D. 1174; and, with the exception of that of Jagannath at Puri, the ancient Dantapura, all were erected under the great Kesari dynasty, or Lion line of kings, who reigned A.D. 473 till 1131, when they were succeeded by the Ganga Vansa, the third of whom built Jagannath. That called Parasuram Eswara is 20 feet square and 38 feet high, and its sculptures are cut with a delicacy seldom surpassed, and of the most elaborate character. It is supposed to have been built A.D. 450 or 500. Those of the Mukut Eswara shrine are even richer and more varied in detail. Bhuvaneswara temple is supposed by Mr. Fergusson (p. 420) to have been built by Lalal Indra Kesari, who reigned A.D. 617 to 657. It is the finest example of a purely Hindu temple in India. 300 feet long and 60 to 75 feet in breadth, every inch of the surface is covered with carving in the most elaborate manner, and the effect is marvelously beautiful. Its Nat Mandir, or dancing-hall, was erected by the wife of Salini, between A.D. 1099 and 1104. Besides this, there are the Raj Rani temple, and many others.

The Canarac temple is known to the British as the Black Pagoda.

The Jagannath temple at Puri externally measures 640 to 670 feet, and is surrounded by a wall 20 to 30 feet high, with four gates. An inner enclosure measures 420 by 315 feet, and is enclosed by a double wall with four openings. Within this last stands the Bāra Dewul, and the great tower rises to 192 feet.

Jajpur, in Cuttack, on the Byturni river, was once the capital of the province. It has a pillar which was erected in the 12th or 13th century.

The last five hundred years anterior to the Christian era were those in which Buddhism effected its settlements in Orissa. The Ceylon texts place the advent of the Sacred Tooth in Puri at 543 B.C. The Buddhists honeycombed mountains, and excavated the rock monasteries of Orissa. The people now are, even more than the Bengali race, conservative, bigoted, and priest-ridden. The whole territory is sacred ground, to which Hindus perform tirth or pilgrimage; but about July is the great period of assembly at Jagannath (yoga-natha). The sun was formerly the object of worship there.—*Colburn's Journal*, 1861; *Thomas' Prinsep's Indian Antiquities*, p. 241; *Wilson's Glossary*; *Cunningham's India*, p. 507; *Elph. India*, p. 223; *Stirling in As. Res.* xv. p. 254; *Imp. Gaz.*; *Fergusson's Cave Temples*.

ORITÆ or Horitæ, among the ancient Greeks, a barbarous people to the west of Indus, called Nesteritæ by Diodorus. Curtius notices the Horitæ in India, and Diodorus states that generally they resemble the Indians. According to Arrian, they were an Indian nation who extended west of the Indus for 150 miles parallel to the sea.

They wore the dress and arms of the other Indians, but differed from them in language and manners. General Cunningham supposes them to be the people on the Aghor river. In the bed of this river there are several jets of liquid mud, which from time immemorial have been known as Ram Chandar ki kup, or 'Ram Chandar's wells.' There are also two natural caves,—one dedicated to Kali, and the other to Hingulaj or Hingula Devi, that is, the 'red goddess,' who is now regarded as a form of Kali. But the

principal objects of pilgrimage in the Aghor valley are connected with the history of Rama. The pilgrims assemble at the Rambagh, because Rama and Sita are said to have started from this point, and proceed to the Gorakh tank, where Rama halted; and thence to Tonga-bhera, and on to the point where Rama was obliged to turn back in his attempt to reach Hingulaj with an army. General Cunningham identifies Rambagh with the Rambakia of Arrian, Tonga-bhera with the river Tonberos of Pliny, and the Tomerus of Arrian. At Rambakia, therefore, he thinks we must look for the site of the city founded by Alexander, which Leonatus was left behind to complete. He thinks it probable that this is the city which is described by Stephanus of Byzantium as the 'sixteenth Alexandria near the Bay of Melane.' Nearchus places the western boundary of the Oritæ at a place called Malana, which he takes to be the Bay of Malan, to the east of Ras Malan or Cape Malan of the present day, about twenty miles to the west of the Aghor river. The occurrence of the name of Rambagh at so great a distance to the west of the Indus, and at so early a period as the time of Alexander, shows not only the wide extension of Hindu influence in ancient times, but also the great antiquity of the story of Rama. He deems it highly improbable that such a name, with its attendant pilgrimages, could have been imposed on the place after the decay of Hindu influence. During the flourishing period of Buddhism, many of the provinces to the west of the Indus adopted that Indian religion, which must have had a powerful influence on the manners and language of the people. But the expedition of Alexander preceded the extension of Buddhism; and General Cunningham therefore only attributes the old name of Rambakia to a period anterior to Darius Hystaspes. Hingulaj (Khingalatchi) is mentioned by the Tibetan Taranath (see Vassilief, French translation, p. 45) as a Rakshasa in the west of India, beyond Barukacha or Baroch.—*Cunningham's India*, p. 304; *Elph.* p. 232.

ORLEBAL, A. B., wrote an Account of a Visit to the Town of Sehwan, in Bom. Geog. Trans. vi. p. 95; Account of the Lake Loopar, *ibid.* i. p. 9; Note on the Ram Ghaut, Bom. As. Trans. i. p. 119; On Muhammadan Architecture in Cairo, *ibid.* ii. p. 119; On the Geology of the Egyptian Desert, *ibid.* p. 229; Hygrometric Tables, *ibid.* p. 309; Report on the Bom. As. Society's Museum, *ibid.* p. 440; On the Meteorology of Bombay; Observatory Reports, 1845, 1846, Bombay, 4to; in British Association, 1847, and London Athenæum, and Reports of the Association.—*Dr. Buist*.

ORMARA or Hormarah, in lat. 26° 11' N., and long. 64° 38' 30" E., a fishing village on the Makran coast. It is in a desolate region. It is famed for its mud volcanoes. Captain Hart, who saw them in 1840, says that there are eighteen; Colonel Goldsmith saw seven. Probably they vary in number.

ORME, ROBERT, the historian of India, was born at Anjengo. He was educated at Harrow School, and returned to Madras, where he rose to become a member of Council, and returned to England, where he died at the age of 73. He was the first Englishman who wrote on the history of India, and was author of Historical Fragments of the Moghul Empire, of the Mahrattas, and of the English Concerns in Hindustan from 1659.

London 1782 and 1805; also History of the Military Transactions of the British Nation in Indostan from 1745, London 1775.

ORMESBY, LIEUT., I.N., wrote Narrative of a Journey across the Syrian Desert in Bom. Geo. Trans. vi. p. 18; Memoir on the Rivers of Mesopotamia.

ORMOCARPUS SENNOIDES. Beauv.

Hedysarum sennoides.	H. Nalla-kashina, R.
Jungli Munghi, . . . DUKH.	Katu murunga, . . . TAM.
Kanana, Shiguru, SANSK.	Adivi munaga, . . . TEL.

The root possesses a considerable degree of warmth, and is prescribed as a tonic and stimulant in certain cases of fever; also, in decoction, it is supposed to be a valuable remedy in rheumatic affections of long standing. With the bark of the root, ground small, and mixed with gingelly oil, a liniment is prepared which the Vytians recommend as an external application in paralytic complaints and in lumbago.—*Am.; Roeb.*

ORMOSIA, a genus of plants of the order Fabaceæ. *O. glauca*, Wallich, is a tree of Dehra Doon, and *O. robusta*, Wight, of Assam.

Ormosia Travancoria, *Bedd.*, is a middling-sized tree of Travancore and South Tinnevely Hills up to 3500 feet, S. Canara Ghats, and probably elsewhere on the Western Ghats of the Madras Presidency. The timber appears to be remarkably good, but at present is almost unknown.—*Beddome, Fl. Sylv.* p. 45.

ORMUZ, Ormaz, or Hormuz, in lat. 27° 5' 55" N., and long. 56° 29' 5" E., a barren, rocky, volcanic island in the Persian Gulf, about 12 miles off the coast of Kirman, 15 miles N.E. of Kishm. It is the eastern extremity of the chain of volcanic mountains which runs parallel to the coast of Kirman, and at Ormuz it consists of a number of isolated hills of rock-salt and sulphur, which compose a mass of about 15 miles in circumference, destitute of springs and vegetation, but abounding in copper and iron-ore. The island gave shelter to the Parsees when Muhammadanism was preached in Persia. In an ancient history of Persia it is recorded that Ormuz was once on fire; and indeed this island, as well as that of Angar, has every appearance indicative of a former volcanic eruption, and it is thought to be an extinct volcano. Ormuz takes its name from a place on the neighbouring continent in Kermania,—the Harmozia and Armuza or Harmozusa of Greek writers, where Nearchus landed and found one of his countrymen wandering from Alexander's camp, in which, some days after, the admiral was received with well-merited honours by his sovereign. But in Alexander's time, the insulated Ormuz is generally supposed to have been the Organa of Arrian and Ptolemy, and Tyrina or Gyrena of Strabo. It is said that the prior city of this name was taken by the Mongols, A.D. 1290, and the inhabitants fled to this barren volcanic island, which was named Ormuz, in memory of the ancient city. The king of this new Ormuz considered it prudent to send tribute to Timur. The city is described by Abdu Razak, the ambassador sent by Shah Rukh to India in 1442, as a place which had not its equal on the surface of the globe. The merchants of Syria, Egypt, Roum, Fars, Khorasan, Irak, and Mawur-u-Nahar, as well as the inhabitants of Java, Bengal, Socotra, Tenasserim, Malabar, Gujerat, and Arabia, all made their way to this port with rare and precious articles, which

the sun and the moon and the rains have combined to bring to perfection. The companions of Alfonso de Albuquerque in 1507 took Ormuz, after a combat described with much animation by one of his countrymen,—a few hundred Portuguese having contended, as he assures us, for eight hours against 30,000 Persians and Arabians, valiantly defending a place naturally strong and well fortified by art.

'High on a throne of royal state, which far
Outshone the wealth of Ormuz and of Ind;
Or where the gorgeous East with richest hand
Showers on her kings barbaric pearl and gold.'

Under the Portuguese it was a place of great trade, but in 1662 (1622?) it was taken by Shah Abbas the Great, with the assistance of the English, and the trade was destroyed. On a plain near the northern extremity of the island are the cisterns and other remains of the once commercial Ormuz, which, in the time of its prosperity under the Portuguese (A.D. 1515), when it was a great entrepot of Indian trade, had 4000 houses and 40,000 inhabitants. The port and anchorage, which gave such importance to the spot, are within two miles of the town. The present inhabitants number about 3000, and are employed in preparing rock-salt, from which the sultan or imam of Muscat as proprietor derives a considerable revenue. The island gives its name to the Straits of Ormuz. The islands of Larrack (or Larek) and Ormuz are 12 miles apart, and Ormuz is about 26 miles north of Ras Musandum. Larrack is 400, and Ormuz 700 feet high. From Larrack we have specular iron-ore as its characteristic, and from Ormuz, rock-salt, sulphur, gypsum, iron-ore, and pyrites. The people on the neighbouring coast seem to be identical with the races who are known to have dwelt there 2000 years ago, and known to the ancients as Ichthyophagi. It was visited by Ralph Fitch. At present a few ruins scattered amidst wild deserts of salt, on a dreary islet, alone remain of the former wealth of Ormuz.—*Markham's Embassy*, p. 44; *India in the 15th Century*; *Clavijs*, p. 94; *Kinneir's Memoir*, p. 12; *Palgrave*; *MacGregor*, p. 354.

ORMUZD, a name amongst the fire-worshipping Zoroastrians for the Omniscient. It is from Ahura mazda,—Ahura, living, and Mazda, wise,—the all-knowing Lord. The ancient inscriptions almost all begin with the words Baga vazarka, Ahura mazda, Deus magnus (est) Oro mazda.—*Bunsen, God in History*. See Ahriman.

ORNITHOLOGY, the science which teaches the natural history and arrangement of birds, from the Greek words *ornis*, a bird, and *lógos*, a discourse, signifying literally 'a discourse upon birds.'

ORNITHOPTERA BROOKEANA, of Borneo, is one of the most elegant of the butterflies. *O. Croesus*, Wallace, the bird-winged butterfly, occurs at Batchian. It is 7 inches across the wings, which are velvety-black and fiery orange. *O. remus*, the largest and most beautiful of all the butterflies, is found in Celebes.—*Wallace*, i. pp. 37, 284.

ORNUS FLORIBUNDA. *G. Don*. Fraxinus floribunda, *Wall.*, is the Nepal ash tree. *O. Urophylla*, *G. Don.*, is the ash tree of the Khassya mountains.

ORONCHON, a small tribe of the Tunguz, in the Lower and Upper Amur. They use the reindeer.

OROPHEA CORIACEA, a middle-sized tree, grows at Dimboola and Raxawa, in the Ceylon central province, at an elevation of about 3000 feet; *O. obliqua*, *Hook. f. et T.*, in the Galle and Ratnapura districts, at no great elevation; and *O. Zeylanica*, *Blume*, in the central province, at an elevation of 2000 to 3000 feet; woods unknown.—*Thw. Zeyl.* p. 8.

OROSIUS, a writer about A.D. 400. In what he says of India he vaguely follows Ptolemy.

OROTALT, the ancient Grecian term for the Arabic Allah Ta'ala.—*Sale's Koran*.

OROTSKO occupy the interior of Saghalin and its eastern coast. They are few in number, their language differs from that of the Aino, and, according to Schrenck, they are Tunguzians. They do not shave the head, but allow the hair to fall over the shoulders, or tie it up in a veil, which hangs down behind. Their women plait or curl the hair. They wear large ear-rings, and, according to Mamia Rinso, a Japanese traveller, are very good looking. The Orotsko have no permanent habitations, but dwell in yurts like the Oronchou of the Upper Amur. Their storehouses are also similar, and are left standing when the owner migrates. The only domestic animal of this tribe is the rein-deer, and a man owning twelve of them is considered well off. Rein-deer carry burdens or draw the sledge.—*Havenstein's Amur*, p. 398.

ORPIMENT. Ter-sulphuret of arsenic, yellow sulphuret of arsenic, and tri-sulphide of arsenic.

<i>Arsanikoon</i> , . . . ARAB.	<i>Zerneik-zard</i> , . . . PERS.
<i>Shih-hwang</i> , . . . CHIN.	<i>Haritalaka</i> , . . . SANSK.
<i>Hartal</i> , . . . HIND.	<i>Aridurum</i> , . . . TAM.
<i>Auri-pigmentum</i> , . . . LAT.	<i>Yellekood-pashanam</i> , . . .

This is of a heavy liver-yellow colour. It is obtainable in all the bazars of India, and is found in the Chinese provinces of Ho-nan, Yunnan, and Kan-su, also in Cambodia. It is used as a paint, also in medicine.

ORR, CHARLES ADAM, a general officer of the Madras Engineers, who built the great anicuts across the river Godavery and Kistna. On quitting India, the following order was issued in the Public Works Department, April 25, 1871:—"The Right Honourable the Governor in Council desires to place on record an expression of the high value attached by Government to the services rendered to the State by Colonel Orr during an honourable career of about 40 years' duration, and especially in the Public Works Department, as a talented projector and able and energetic executive officer, and for the last seven years as the confidential adviser and organ of Government in the important branch of the public service to which he has been attached. As a principal executive officer on the irrigation works in the Godavery delta, and as the designer and constructor of the similar works in the Kistna delta, Colonel Orr has perpetuated the memory of his professional ability."

ORRIS ROOT, Florentine iris.

<i>Usul-us-soun</i> , ISRA.	<i>ARAB.</i>	<i>Violen wurzel</i> , . . . GER.
<i>Usul-ul-manjunie</i> , . . .		<i>Kewra-ki-jar</i> , . . . HIND.
<i>Peh-ohi</i> , . . . CHIN.		<i>Beg-banafsha</i> , . . .
<i>Iris de Florence</i> , . . . FR.		<i>Ireos</i> , . . . IT.

In Europe, this is the root or rhizome of the Iris Florentina, and of the German and pale Turkey iris obtained from the south of Europe and Asia Minor. It is tuberous, oblong, about an inch thick, white, odour like that of violets; taste when dry, bitter. In India, an excellent kind of

orris root is sold in the bazars under the name of Beg-banafsha, literally violet root. An inferior description of orris root is imported into Bombay from the Persian Gulf, which is procurable in most bazars. An iris is cultivated in India, the roots of which are used as the orris root. Orris root is used by perfumers, and in medicine.—*O'Sh.* p. 655.

ORSEDUE, Dutch gold.

<i>Khater goud</i> , . . . DUT.	<i>Oliquant</i> , . . . FR.
<i>Orsidue</i> , . . . ENO.	<i>Fittergold</i> , . . . GER.
<i>Manheim gold</i> , . . .	<i>Orpello</i> , . . . IT.
<i>Oripeau</i> , . . . FR.	<i>Oropel</i> , . . . SP.

An article resembling gold-leaf, made of copper and zinc, and largely used in tinselling dolls, toys, images, etc. It is made up into books, and in this state is packed in casks and cases for exportation from Manheim in Germany, where it is chiefly manufactured.

ORTHANTHERA VIMINEA. *Wight*.

Apocoyne viminea, *Wall*.

<i>Matti</i> , . . . BEAS.	<i>Mowa</i> , <i>Lanebar</i> , TR-IND.
<i>Khip</i> , <i>Kip</i> , . . . SIND.	

A twiggy, leafless plant, one of the Asclepiadæ, not uncommon about Dehli and some other parts of Cis-Indus, occasionally in the Siwalik tract and Trans-Indus. It grows luxuriantly along the foot of the mountains. It attains a height of ten feet, and is remarkable for the length and tenacity of its fibres; and its long, straight, leafless, slender, and wand-like stems point it out as seemingly well suited for rope-making. Near Dehli, after four or five days' steeping, its fibre is extracted for making rope. In Sind, also, it appears to be this plant of which unsteeped stalks are made into ropes for Persian wheels, which are said to be very durable, as they do not readily rot from moisture.—*Royle, Him. Bot.* p. 274; *Royle's Fib. Pl.*; *Stewart, Panjab Plants*.

ORTHOTOMUS LONGICAUDA. *Gmel*. The tailor-bird; its curiously fashioned nest displays marvellous skill and care; it is plentiful in the groves and gardens of India. The male is larger and has a longer tail than the female, but both are yellowish-white below and olive-green above. The call of the male is a frequent repetition of Whee-u, and the male birds in a garden vie with each other.

ORTOLAN, green-headed bunting.

<i>Emberiza hortulana</i> , <i>Linn.</i>	<i>Hortulanus</i> , <i>Gesmer</i> .
<i>E. Buchananii</i> , <i>Blyth</i> .	<i>Miliaria pinguescens</i> , <i>Fr.</i>
<i>Garten-ammer</i> , . . . GER.	<i>Ortolano</i> , . . . IT.
<i>Fell-ammer</i> , . . .	<i>Gerste-kneu</i> , <i>NETHERLANDS</i> .
<i>Jam-johara</i> , . . . HIND.	<i>Tordino berluccio</i> , <i>VENICE</i> .

The ortolan of Europe is occasionally seen in the west of India. It was in Colonel Sykes' catalogue of Dekhan birds. In Europe they are caught in great numbers, are fattened for the table, and are considered a great delicacy. In India, the social lark, *Calandrella brachydactyla*, and the *Pyrrhuloxia grisea*, are popularly called ortolans. A kind of lark called an ortolan is mentioned by Dr. Hooker as abundant in the Parwa district; this is a migratory bird. The flocks are large, and the birds so fat, that they make excellent table game; they return from the north in September.—*Hooker's Him. Jour.* i. p. 998.

ORUKZAI, an independent Pathan tribe beyond the N.W. frontier of British India. Their country extends from the Sipah tract (which adjoins the Afridi hills) round the north-western corner of the Kohat district, and then nearly onward to the top

ORYZA SATIVA.

of the Miranzai valley (which belongs to Kohat) till it joins the country of the Zymukht Afghans. The tribe is one of the largest on the N.W. frontier, and numbers 20,000 fighting men, most of whom are good hill soldiers. The Orukzai hills stretch a long distance to the west. In the interior of these hills there is the cool table-land of Tirah, where the clansmen resort in the summer with their cattle, and in the winter return to the pasture grounds of the lower ranges near the British frontier. The sections of the tribe that have come in contact with the British are the Shekhan, the Mishti, and the Raabeah Khel. The portions of the Kohat district adjoining the Orukzai hills are the subdivisions of Samilzai, Hungu, and Miranzai.

ORYZA SATIVA. *L.* In husk or growing.

Ruz,	ARAB.	Gabah, in husk, . . .	MALAY.
Dhan,	BENG., HIND.	Paiera,	MALEAL.
Sa-ba,	BURM.	Nella, Arisi, . . .	TAM.
Tau,	CHIN.	Bium, Uri,	TEL.
Rice plant, . . .	ENG.	Nivari dhanyamu, .	"
Paddy, in straw, .	MALAY.		

The grain husked.

Pusnee,	BENG.	Tai,	JHELM.
Bhatta,	CAN.	Dein, Tani, . . .	KASH.
Kang-mi, Mi, . . .	CHIN.	Bras,	MALAY.
Chawal,	DUK., HIND.	Ari, Arisi, Payera, .	MALEAL.
Rice,	ENG.	Birinj, Shadi, . .	PERS.

The *Oryza* genus of plants belongs to the natural order Panicaceæ. *Oryza* is the term by which rice was known to the Greeks and Romans, and which has been adopted by botanists as the generic name of the plant yielding that valuable grain. The Greek term would appear to be derived from the Arabic *Aruz*, and this is allied to *Uri*, a Telinga name of cultivated sorts; but the Sanskrit names are *Anu*, *Dhanya*, and *Vrihi*, the wild kind being called *Nivara*; while that of the great tanks is called *Arisi* in the Tamil language. The European names are evidently all derived from the same sources, but the Malay name, *paddy*, is applied to the rice in its natural state, or before being separated from the husk. The natives of India call it *Dhan* in this state, as well as the plant, and the rice itself is called *Chawal*. The genus *Oryza* has two glumes to a single flower; paleæ two, nearly equal, adhering to the seed; stamens six, and styles two. Dr. Roxburgh describes two species,—one, *O. sativa*, distinguished by its diffuse panicle; the other, *O. coarctata*, has the panicle contracted, the valvules of the calyx subulate, and the leaves culm-clasping. This species is a native of the delta of the Ganges, and was first discovered there by Dr. Buchanan in 1796, but was not found to be applied to any use. The common rice, *O. sativa*, unlike many long-cultivated grains, is still found in a wild state, *Nivara*, *SANSK.*, *Newari*, *TEL.*, in and about the borders of lakes in the Rajamundry Circars of the Peninsula, though never cultivated, because the produce is said to be small compared with that of the varieties in cultivation. The composition per 100 parts of several rices was as under:—

	Pegu.	Bombay bazar.	Brosch.	Bareilly.	Malacca.
Moisture,	13.50	13.00	13.10	12.80	12.90
Nitrogenous matter, . .	7.41	7.44	7.12	8.24	7.24
Starchy matter,	78.10	77.63	78.70	77.80	78.56
Fatty or oily matter, . .	0.40	0.70	0.49	0.64	0.60
Mineral constituents (ash),	0.59	1.23	0.66	0.52	0.70

ORYZA SATIVA.

In the East Indies, rice is used for food for man, cattle, and fowl; for the manufacture of starch, and the distillation of spirit, etc. Rice is the food of a great number of the human race. The inhabitants of N. and S. America, on the S. of Europe, of N. Africa, of the south and east of Asia, all largely use it. It is the most easily digestible of all vegetable substances, but its bulk is objectionable.

There are in several provinces three distinct crops; the first, grown on somewhat high ground, is the early crop, sown for the most part in June, and reaped in August and September. The Burmese recognise nearly a hundred varieties of rice, but their principal distinctions between the different kinds are, the hard-grain rice, soft-grain rice, glutinous rice. These names are designative.

The Natsung rice of Burma is the hardest grain, and is the rice principally exported to Europe. The Meedo is the chief of the soft-grain varieties; is much preferred by the Burmese to the hard-grained sorts, and it is certainly superior in taste when cooked; but the hard-grained rice is chiefly purchased by the merchants for export, as it keeps better, and the soft-grained rice is too much broken by European machinery in cleaning. This last objection appears to have been overcome, and a demand sprang up for the Meedo rice for the markets of foreign Europe.

The Koung-nyeen, or hill rice, is called glutinous rice by Europeans, from the property it possesses, when cooked, of the grains all adhering in a thick glutinous mass. It is the chief article of food with the Karen and other hill tribes, but is not much eaten by the inhabitants of the low swampy plains, where the common rice is grown.

Many varieties of rice are grown in Oudh, but five kinds are considered among the best. Mihee and Basee are foremost. The peculiarity in the cultivation of these two kinds is, that they are transplanted and placed about 5 inches apart. By this method, if the soil is good, they grow to the height of an ordinary-sized man, and produce a much larger quantity than if otherwise treated. The odour and flavour of these two kinds, when cooked, are superior to those of any other variety. They are only used by such as can afford to buy them. Other esteemed varieties are the Bateesa and the Phool-birinj. They are sown broadcast in June, and left so, and they are mostly used by natives. The first two mentioned, when new, sell for 10 or 12 seers per rupee, and become dearer according as they become older. The other three kinds sell for about 19 seers per rupee, and are dearer if older. Some prefer Phool-birinj, as it swells in boiling, and has an agreeable odour.

Throughout the Panjab, where the soil is low and good, and water abundant, especially in the upper part of the Jullundur Doab, rice is grown. It is also abundantly grown throughout Siwalik tract, and up the valleys to an elevation in places of 6000 or even nearly 7000 feet. In Peshawur the varieties of rices are called doaba, shughra, zafrani, jyotshi, kaperi, and lukh, or coarse rice. In the plain districts the coarse rice commonly grown is called munji; other varieties met with in the bazar, of second and third quality, are begami and samoja, also sohn pat; a fourth class is the red-skinned kind called sathi, also sharbati and chinwa lal,—this is inferior.

In Mysore, rice is extensively grown in the wet

lands irrigated by the canals of the rivers Cauvery, Capila, Hamavety, Lutchman Tirta, and Pennar, at talapitige or fountain-heads, and under tanks. Nuggur and Astagram divisions have proportionally the largest produce of paddy. It is exported from one part of Mysore to another; but except to the Neilgherries, and a portion to the western coast from Nuggur and North Astagram, little goes out of the territories. There are many varieties. Indeed, almost every village in India has a variety of this grain peculiar to the locality. The ryots do not try to preserve paddy for a length of time, as it rapidly loses in weight.

The ardent spirits prepared from rice are—

Arrack, . . .	BATAVIA.	Saki, . . .	JAPAN.
Ayet, . . .	BURM.	Rij, Tanpo, Sicheu, JAV.	
Mandrin, . . .	CHIN.	Phaur, . . .	NEPAL.
Paniz, . . .	COREA.	Lau, . . .	SIAM.

The No or glutinous rice of China contains much dextrine, and is rounder in the grain. The best glutinous rice of China is from Kiang-si; it is preferred for making congee, dumplings, wine, but is not so digestible as common rice.—*Ainslie; Roxb. Stewart; Smith; Powell; Madras Ex. Jur. Rep.; Catalogue Ex.; Simmonds.* See Rice.

OSACA, an imperial city of Japan, pleasantly situated on a river, spanned by a bridge with several arches.

OSARA REWARD. In Tibet, extract of rhubarb, i.e. lit. rhubarb juice. In India, gamboge.

OSBECKIA ASPERA. *Blume.*

Osbeckia glauca, Benth. | *Melastoma asperum, Linn.*
Choto-plutika, . . . BENG. | *Kaat katali, . . . MALEAL.*

This belongs to the order Melastomaceæ; there are several species. A pretty species, having the stamens all of equal length, is in flower on the Moulmein Hills in August.—*Roxb. ii. p. 224.*

OSCILLATORIA RUBESCENS. Ehrenberg, while navigating the Red Sea, observed that the occasional red colour of its waters was owing to enormous quantities of an animal, which has received the name of *Oscillatoria rubescens*, and which seems to be the same with what Haller described as a purple conferva swimming in water.

OSHADHI-PATHI. SANSK. Lord of herbs, an epithet of the Hindu deity Soma, the moon.—*Dowson.*

OSHAUGHNESSY, SIR WILLIAM, M.D., a medical officer of the Bengal army, who introduced the electric telegraph into India. Author of the Bengal Dispensary, Calcutta 1842; Explosion of Gunpowder under Water by Galvanic Battery, in Bl. As. Trans., 1839, iii. p. 851; Preparation of Ganja, etc., ibid. 732, 838; Communication of Telegraphic Signals, etc., ibid. 714; Effects of Sea-Water on Iron, ibid. 1843, xii. part 2; Report on the Establishment of the Electric Telegraph, Pamphlet, Calcutta 1852, published by Government; also author of the Bengal Pharmacopæia.

OSHTERANI. South of the Sheorani hills, continuous with the Dehra Ismail Khan and Dehra Ghazi Khan districts, the small Pathan tribe of Oshterani dwell, mustering about 1000 fighting men. They are brave and pugnacious, but not predatory. They dwell chiefly in the hills, and are so far independent; but many of them possess and cultivate lands in the plains at the foot of the hills, and consequently within British territory. Before annexation, they used to be quite as violent as their neighbours, especially

during the continuance of a deadly feud with the Kasrani. The quarrel was, however, composed by Major Edwardes, before annexation. Subsequently, they never attacked British subjects, or made raids on property, and have evinced a good and friendly disposition. On the border of the Oshterani hills, and nearly opposite to Dehra Futteh Khan, is the Vooch or Korah pass, faced by the British outposts of Doualwalla and Vehoa.—*Records, Government of India.*

OSIRIS, a god of the ancient Egyptians. He was worshipped as the Lord, the God and Father of each individual soul, the Judge of men, who passes sentence strictly according to right and wrong, rewarding goodness and punishing crime. The worship of animals was not introduced into the established religion earlier than the second dynasty, 200 years after Menes, therefore not much more than 5000 years ago (Bunsen's God in History, i. p. 226). According to some authors, Amun, the King; Neph, the Divine Spirit; Phthah, the Creative Power; Khem, the Reproductive Power; Thoth, the Divine Intellect; and Osiris, the Goodness of God, were all one and the same being. Osiris was the essential personification of divine goodness. Many cities claimed the honour of being his burial-place, particularly Philæ, Sais, Busiris, and Taposiris. At Memphis he became united to Phthah, and was called Phthah-sokar-Osiris; and also to the bull Apis, and then became Osiris-apis or Serapis, who was afterwards the chief god of Egypt. Isis, his queen and sister, held rank before him, and was the favourite divinity of the country. She had the characters of all goddesses in turn. She was sometimes the mother, sometimes the queen of heaven, sometimes Hecate, the goddess of enchantments. Horus, their son, had a hawk's head, and wears the crown. He was the avenger of his father's death. But he sometimes appears with the sun on his head, as Horus-ra or Aroeris, the elder Horus, and he is not then the son of Isis. They had another son, Arrubis, with a jackal's head, whose office was to lay out the dead body and to make it into a mummy. The god Tympnon is in form of a she-bear or hippopotamus, walking on its hind legs. He was the author of evil, and he killed his brother Osiris. Nephthys was the sister and companion of Isis. Of this family, the trinity is sometimes Isis, Osiris, and Nephthys.

OSORIO. Geronimo Osorio, author of the great work, De Rebus Emmanuelis Virtute et Auspicio Gestis, 1571. It is an invaluable compilation on the early Portuguese period of its relations with the East Indies.

OSPHROMENUS OLFAX. *Commerson.* The Gourami at Penang, Malacca, Mauritius, and Madras. This fish has been successfully naturalized. A writer, signing himself 'Z,' in Land and Water of 8th February 1868, calls it the Ikan gorammi of the Malays, and adds: 'Dr. Cantor, in his catalogue of Malayan fishes (Jour. As. Soc. of Bengal, vol. xviii.) remarks that . . . they become tame, so as to appear on the approach of their feeder, and will rise to flies, beetles, and certain flowers, particularly those of a large hibiscus. Among themselves they are pugnacious. Several living ones were imported, and placed in a tank in the Calcutta Botanic Gardens, where they appeared to thrive.' General Hardwicke (Zool. Jour. iv. p. 309) gives an account of the breeding of this fish, appar-

ently monogamous; he observes they commence at six months of age, whilst their fecundity is astonishing. During the breeding season they frequent the sides of tanks, where shelter is afforded them by the grasses and weeds growing in the water. For several days they are very active, passing in and out of their grassy cover, and in some places thickening it, by entangling all trailing shoots, and forming what is generally considered the spot under which the ova are deposited. They continue to watch this place with the greatest vigilance, driving away any interloping fish, and at the end of a month numerous fry appear, over which the old gouramies keep watch many days.—*Dr. Day.*

OSRHOENE of the Romans, the modern Orfa in the pashalik of Baghdad.

OSTEOCOLLA, an inferior kind of glue manufactured from bones. In Gurief, a fine boiled fish-glue is prepared, perfectly transparent, having the colour of amber, which is cast into slabs and plates. The Ostiaks also boil their fish-glue in a kettle.

OSTIAK. On the river Ket is a tribe called by the Tongusians Gosetiyasck or Ostiak, who possess a number of scattered habitations in the woods on each side of the Ket. They hunt the tiao, and pay a fixed tribute of the skins of this animal. The Ostiak regard it as a crime to marry a woman of the same family, or even of the same name. The same custom prevails among the Circassians, the Chinese, the Rajputs, Brahmans, and the Samoyeds.—*Staunton's Narrative; Pallas, iv. p. 96; Lubbock's Civil.*

OSTODES ZEYLANICA. *Thw.*

Desmostemon Zeylanicus, *Th.* | Walka-kouua, . SINGH.

There are two varieties, a large and a small. The large tree is common in the dense moist forests of the Wynad, Annallays, Tinnevely Ghats, Travancore, and Ceylon, up to about 4000 feet elevation. Its timber is in use for ordinary work in Ceylon. The variety *O. minor*, *Mull.*, is much rarer than the ordinary form. Colonel Beddome observed it only on the Annallays, and it occurs in Ceylon; it differs in no way, except in the size of all its parts, but it is considered a distinct species by Muller.—*Beddome, Fl. Sylb.*

OSTRICH, *Struthio camelus, L.*

Thar-ud-jamal, . . .	ARAB.	Shutr-murgh, . . .	PERS.
Strudsfugl, . . .	DAN.	Abestrus, . . .	PORT.
Struisvogel, . . .	DUT.	Strouss, . . .	RES.
Autruche, . . .	FR.	Avestruz, . . .	SP.
Strauus, . . .	GER.	Struts, . . .	SW.
Struzzo, . . .	IT.		

This is the only species of the genus *Struthio*. It inhabits Central and Southern Africa. It runs with great speed, aided by its wings, which are not sufficiently developed for flight. The length between each stride, when at full speed, is not unfrequently from 12 to 14 feet, moving with a velocity that puts the swiftness of the horse to the trial. They feed on the sprouts of the *Acacia mimosa*, and on the pulp of the *Naras*. When hunted by horsemen, the latter surround the troop of ostriches and drive them from one to another, gradually narrowing their circle. In the height of the hot weather, the ostrich makes but little effort, and a single horseman suffices to catch them. The ostrich imitates the lapwing and oyster-catcher in its stratagems to mislead those who approach its nest or its young. It hatches its own eggs, but reserves a few for the food of its young. Its

usual cry is a short roar, but when at bay it biases like a gander. Their long wing-feathers are sold at from £1 to £12 the lb.—from 70 to 90 feathers go to the lb.; the thinner the quill, and the longer and more wavy the barbs, the more it is prized.

Ostrich farming has been successfully introduced at the Cape of Good Hope, in S. America, and on the Pacific side of the United States, from species of Rhea. Buffon mentioned that the feathers of the finest quality are no doubt obtained from living birds. Captain Lyons, who travelled through the northern latitudes of Africa in the early part of the present century, also mentioned that 'at Sockna and its environs they keep ostriches in their yards and enclosures, and collect their feathers three times in two years. From the ostrich skins which I have seen exposed for sale, I fancy that the best plumes we see in Europe are obtained from those thus kept enclosed; for those obtained from wild birds have theirs so broken and soiled, that there are often not a dozen good ones found.' In 1856, it appears to have been suggested by the French that the ostrich might be domesticated in Algeria. According to Marnot, the native tribes of the province of Dara, in Numidia, raised ostriches for their feathers. They were put to graze in troops, so as to secure their feathers in the best possible condition.

M. J. Verran, the naturalist, made a large profit from the feathers derived from the ostriches he raised in his menagerie at Cape Town; and he managed to pluck his birds, without inconvenience, regularly twice a year. And the systematic breeding and rearing of ostriches in South Africa has taken deep and extensive root. In 1860, a pair of ostriches, six months old, could be purchased for 10s.; now, for one bird alone, a few days after hatching, £5 will be given, and for those of three or four months old, £8 to £10; at 12 to 18 months, £12, 10s. to £16; from 2 to 4 years, £20 to £30; a full-grown pair, from £60 to £300, and even £1000. In 1860, the quantity of ostrich plumes exported was 2297 lbs., valued at £19,201; in 1873 it had grown to 31,581 lbs., worth £159,677. An ostrich in full development and plumage, only, however, yields every eight months $\frac{1}{4}$ lb. of feathers.

The breeding birds are occasionally supplied with chopped meat. The cock birds are viciously pugnacious. They kick forward, and the claw on the end of the bigger toe rips like a knife. The body of the male is jet black, with beautiful white feathers drooping from its wings and tail, and long black feathers slightly overhang them.

They lay from 6 to 14 eggs, and are hatched in 42 days. A full-grown male ostrich, kept for plucking, yields annually about 40 long white and variegated feathers from the wings, called primes and seconds, equal to about 8 ounces in weight. These grow in two rows on each wing. Next in value are the tail-feathers and the long and short black ones. The hen has several long white and variegated feathers, and long and short drab ones, but the former are not of equal value to those of the cock bird. A pair of full-grown ostriches, from 4 years old and upwards, will bring in about £25 per annum by plucking them every 8 months, the average of the male's plucking being £10, and that of the female's £7, 10s. Young birds are plucked for the first time when 10 or 12 months old, but are only worth 7s. 6d. to 15s. the lb,

Their second plucking is when about 20 months old. Cutting obtains better feathers than plucking.—*Hartwig*.

OSWAL, a tribe of Rajputs engaged in commerce, and known to Europeans and natives of India as Marwari, also as Baniya and as Saraogi. They are not numerous, but are dispersed through India engaged in their avocations, usually of a banking financial character. They are large made, fair men, and are almost all of the Jaina religion, as also are all the mercantile Agarwal, Bandd'hmatai, Jaiswal, Jati, Kharelwal, Lohiya, Sri Mal, Sri Sri Mal, Sri Mali Pattan, Palliwal, Purwal.—*Sherr. Tribes*, p. 289.

OSYRIS, a genus of the Santalaceæ or sanders-wood tribe of plants. *O. Nepalensis*, *Don.*, is a tree of Nepal, Sirmur, and Hardwar. *O. Wightiana*, *Graham*, of Kandalla, the totul, one of the Santalaceæ tribe of plants, is a small tree, with twiggy, erect-growing branches; in flower and fruit most of the year. The fruit, when ripe, is of the size of a small sloe, of a yellow colour, with a mark on the top like a blueberry. It is sweet and very pleasant when tasted, and is deservedly ranked amongst the wild fruits by Colonel Sykes. *O. Nepalensis* and *Eurya fasciculata* are indigenous in the Himalayan valleys, resemble the tea plant, and were mistaken for it.—*Riddell*.

OT or Ota, a Hindi terminal suffix, implying of or belonging to, as Bapote, Gehlot, Mairot. The mountain clans of Albania and other Greeks have the same distinguishing termination, and the Mainot of Greece and the Mairot of Rajputana alike signify mountaineer, or of the mountain; Maina in Albanian, Maira or Mera in Sanskrit.

OTARIA JUBATA, the maned sea-lion, is 11 feet long, has an erect curly hair-tuft at its neck, with a mane flowing completely round its breast, but other parts of its body have only smooth hair or bristles. *Otaria Stelleri*, the sea-lion of Steller, is found on all the coasts and islands of the Pacific, from lat. 51° N. to the extreme south, but chiefly in Prebelow Island, St. George's. It is hunted by the Aleuth, who use its tawny bristled hair for a boat covering and articles of clothing.—*Hartwig*.

OTHMAN, Usman, or Osman, the 3d khalif of the Muhammadan Arabs.

OTHMAN, the founder of the Turkish empire, from his activity in warfare, was named Ilderim or Yeldern, signifying lightning. He opposed Timur, who in 1403 defeated him at Angora, took him prisoner, and, according to report, confined him in an iron cage. He died soon after. The Turkish race, from Ertoghul's son Othman, has been called the nation of the Ottoman Turks, and the Osmanli. See Ertoghul; Ottoman; Turkey.

OTIDIDÆ, the bustard family of birds, comprise the genus *Otis* and three sub-genera, also species of *Houbara*, *Eupodotis*, and *Sypheotides*.

Eupodotis Edwardsii, *Gray*, Indian bustard.

<i>Otis nigriceps</i> , <i>Vigors</i>.	|	<i>O. Lucionensis</i> , <i>Vicillot</i> .
Tokdar solun, . . . HIND.	|	Burra chirath, . . . HIND.
Guganbher, . . . "	|	Batt-meka, . . . TEL.
Hookna, Gurayin, . . . "	|	Batt-myaka, . . . "

Length, 4½ to 5 feet; weight, 26 to 28 lbs. Not found in the valley of the Ganges, Bengal, Behar, or the Malabar coast, but is spread over other parts of India. *Eupodotis nuba*, *Ruppell*, *E. Ludwigii*, *Ruppell*, *E. caffra*, *Licht.*, *E. Denhami*, *Children*, *E. Arabs*, *Linn.*, and *E. kori*, *Burchell*, occur in Africa.

Houbara Macqueenii, *Gray*, *Hardw.*, *Gould*, is the *O. marmorata*, *Gray*, *Hardw.*, and is the Tilaor, female, and Obarra, HINDI. The Indian houbara bustard is 25 to 30 inches long, and weighs 3½ to 3¾ lbs. It is found throughout the plains of the Panjab and Upper Sind, occasionally crossing the Sutlej and the Indus lower down, but it does not occur east of Dehli. It is much hawked both in the Panjab and Sind, the falcon used being the cherrug or Falco sacer.

Sypheotides Bengalensis, *Gm.*, Bengal florikan.

O. deliciousa, *Gray*, *Hardw.* | *O. Himalayana*, *Vigors*.
Charras, Charaz, . . HIND. | Dubar . . . of NEPAL.

Length, 24 to 27 inches; weight, 3½ lbs. It occurs in all the north of India, from Calcutta to the Himalaya.

Sypheotides auritus, *Lath.*, black florikan.

<i>Otis auritus</i> , <i>Latham</i>.	|	<i>O. fulva</i> , <i>Sykes</i> .
Kan-noul, . . . CAN.	|	Tan-mor, . . . MAHR.
Charas, Charaz, . . HIND.	|	Waragoo-koli, . . TAM.
Chulla charz, . . . "	|	Niala-nimill, . . . TEL.
Likh, Khar-titar, . . . "	|	

Length, 18 to 19 inches; weight, 16 to 18 oz.; found throughout India.

Otis tetrax, *Linn.*, the Tetrax campestris, the small bustard of Europe, is said to have been found in the Peshawar valley. It occurs in Central and Western Asia and N. Africa.

The following are bustards of Africa, some of which spread into Arabia, viz.:—*O. rhaad*, *Shaw*; *O. œrulescens*, *Vieill.*; *O. acolopaca*, *Temm.*; *O. afra*, *L.*; *O. afroides*, *S.*; *O. Senegalensis*, *Vieill.*; *O. melanogaster*, *Ralph*.

Otis tarda, *Linn.*, great bustard; *Avis tarda*.

Kolan, Jurz, . . . ARAB.	|	Jungli-kabut, . . . HIND.
Asford, . . . "	|	Starda commune, . . . IR.
Battmiaka, . . . CAN., TEL.	|	Ahu-bura, . . . PERS.
Ostard, Houtrade, . . FR.	|	Gustard, . . . SCOTCH.
Bistarde, . . . "	|	Abu-tarda, . . . SP.
Trapp, Trapp-gans, . . GER.	|	Nil-naray, . . . TAM.
Grossetrapp, . . . "	|	Batt-miaka, . . . TEL.
Acken-trapp, . . . "	|	Bit-miaka, . . . "

The bustards live generally in open countries, preferring plains or wide-spreading, extensive downs, dotted with low bushes and underwood,—localities which give them an opportunity of descreying their enemy from afar.—*Ainslie*; *Eng. Cyc.*; *Jerdon's Birds*.

OTOLITHUS, a genus of fish on the Malabar coast; excellent isinglass is obtained from two species. They are allied to the perches, but have more variety, and a more complicated structure in their natatory bladders; almost all are good for eating, and many of superior flavour.

Otolithus biauritus, *Cantor*. Total length, 3 feet. Inhabits Sea of Penang, Malayan Peninsula, Singapore, Lancavy, Tenasserim Provinces, and, according to Jerdon, the Malabar coast, where it is called Sille-kora in Malealam. The air-vessel is nearly one-half of the total length, and in shape might be compared with an elongated antique urn with two handles. From the anterior part of each of the latter proceed five branches, four of which give off smaller ones to each side, and the fifth is tortuous and smaller than the rest. It yields a large quantity of isinglass, which in the Chinese market is considered to be of the best quality, and fetches 40 to 50 Spanish dollars per pikul.

Otolithus ruber, *Bloch and Schneider*. Jaran-gigi, MALEALAM. The total length of this fish is 2 feet 6 inches. It yields isinglass.

Otolithus versicolor, *Cuv. and Val.* Panan, Panna, TAM. The total length of this fish is only 6½ inches. It inhabits the Sea of Penang. Its air-vessel is one-quarter of the total length. Jerdon says this fish is a foot long, and very common at Madras. It is the *Perche pierre* of Pondicherry.—*Cantor*, p. 1046.

OTONO, a city alderman of Japan. In Japan, a city is divided into wards; for the ten wards there is one lord mayor, who every morning receives the Otono or alderman, hears the cases of minor importance, and decides upon them with the alderman summarily. The Otono post up the public notices in their quarters, and take care of all the poor and sick in their wards.—*Hodgson's Nagasaki*, p. 228.

OTTER, a name for two distinct animals, the land-otter (*Lutra vulgaris*, *L. nair*, *L. leptonyx*, and *L. Canadensis*) and the sea-otter (*Enhydra marina*). Both are caught for their fur; of the former, Great Britain receives about 20,000 skins a year. The latter, more like the seal in its habits, is obtained in much smaller numbers, but, being the royal fur of China, is highly valued there and in Russia. The otters of India and S.E. Asia are classed by naturalists under the genus *Lutra*, and sub-family *Lutrinae*.

The common Indian otter, the *Lutra nair*, *F. Cuv.*, is found throughout India, Ceylon, Burma, and Malaya, from the seashore to considerable elevations, frequenting rivers and salt marshes, making its lair under boulders and rocks. It is trained in Bengal and China to assist in fishing, by driving the fish into the nets. It is easily domesticated.

The hill-otter of India, *L. vulgaris*, *Erzleben*, is the common otter of Europe, and is found only in the Himalaya.

The clawless otter, *L. leptonyx*, *Horsfield*, is found throughout all the Himalaya, from the N.W. to Sikkim, also in Lower Bengal and Arakan.

Lutra auro-brunnea, a small otter of the Himalaya, has been described by Mr. Hodgson.

Lutra barang, *Raffles*, is an otter of the Malay Peninsula.

Lutra sifung, *Raffles*, is found in Singapore and Borneo.—*Jerdon*; *Horsfield*; *Powell*; *Blyth*.

OTTO OF ROSES.

Atr, . . . ARAB., GUJ. | Gulab-ka-atr, . . . HIND.
Mei-kwei-yu, . . . CHIN. | Atr-i-gul, . . . PERS.

Otto of roses is a perfume obtained by the distillation of rose petals. It is manufactured in France, Turkey, Tunis, and Persia, and is also made in Hindustan. Dr. Jackson mentioned that in the early part of the 19th century, around the station at Ghazipur, there were about 300 bighas, or about 150 acres of ground, laid out in small detached fields as rose gardens, most carefully protected on all sides by high mud walls and prickly pear fences to keep out the cattle. These lands, which belong to zamindars, are planted with rose trees, and are annually let out at so much per bigha for the ground, and so much additional for the rose plants,—generally 5 rupees per bigha, and 25 rupees for the rose trees, of which there are 1000 in each bigha. The additional expense for cultivation would be about 8 rupees; so that for 38 rupees you have for the season per bigha of 1000 rose trees. If the season is good, this bigha of 1000 rose trees should yield one lakh of

roses. Purchases for roses are always made at so much per lakh. The price of course varies according to the year, and will average from 40 to 70 rupees. As soon as the roses come into flower, the zamindar and cultivators of the rose gardens, as well as intending purchasers, meet in the city, and, according to the demand and expected produce, a nerrick or market rate is established, and purchasers then enter into agreement with the cultivators for so many lakhs of roses at such a price. This agreement is considered binding, and the cultivator is obliged to deliver the quantity at the contract rate; when that is completed, another can be made, but this latter is always at a much higher rate.

Unlike the propagation of the specimen roses of England, which depend on grafting, these rose trees are raised from cuttings, which are planted out from nurseries after one year's growth, at an expense of 25 rupees per bigha. These slips are watered every five or six days till the setting in of the rains, and when once they have taken root they are finally transplanted to the rose garden. Here each rose tree is planted 3 feet apart from the other, and on an average 1000 shrubs are allowed to grow in each bigha of land. Rose fields are kept scrupulously clean by constant weeding and loosening of the soil round the root. This operation takes place about three times a year. The best sort of manure for roses is sprinkled all over the fields annually, and once a year the fields are irrigated by flooding them with well water. Pruning takes place in the month of January; the flowering season is in February and March, when the blossoms are picked and collected each day before sunrise. The average yield of flowers per bigha is from 30,000 to 60,000. These are sold to the distillers at a rate of from 100 to 125 rupees per lakh of flowers. The total area under rose cultivation in Ghazipur was estimated at about 200 acres, bearing an average rental of 4 rupees per bigha.

The rose trees come into flower at the beginning of March, and continue so through April. In the morning early the flowers are plucked by numbers of men, women, and children, and are conveyed in large bags to the several contracting parties for distillation. The cultivators themselves very rarely manufacture. The native apparatus for distilling the rose-water is of the simplest construction; it consists of a large copper or iron boiler well tinned, capable of holding from 8 to 12 gallons (shaped like the earthen hundi pots in which the gomastahs send in their opium), having a large body with a rather narrow neck, and a mouth about 8 inches in diameter; on the top of this is fixed the head of the still, which is nothing more than an old deghehi, or cooking vessel, with a hole in the centre to receive the tube or worm. This tube is composed of two pieces of bamboo, fastened at an acute angle, and it is covered the whole length with a strong binding of corded string, over which is a luting of earth to prevent the vapour from escaping. The small end, about two feet long, is fixed into the hole in the centre of the head, where it is well luted with flour and water. The lower arm or end of the tube is carried down into a long-necked vessel or receiver, called a bhubka. This is placed in a 'hundi,' or pot of water, which as it gets hot is changed. The head of the still is luted on to the

body, and the long arm of the tube in the bhubka is also well provided with a cushion of cloth, so as to keep in all vapour. The boiler is let into an earthen furnace, and the whole is ready for operation.

The best rose-water in the bazar may be computed as bearing the proportion of 1000 roses to a seer of rose-water; this perhaps may be considered as the best procurable. From 1000 roses most generally a seer and a half of rose-water is distilled, and perhaps from this even the attar has been removed. The boiler of the still will hold from 8000 to 12,000 or 16,000 roses. On 8000 roses from 10 to 11 seers of water will be placed, and 2 seers of rose-water will be distilled. This, after distillation, is placed in a carboy of glass, and is exposed to the sun for several days to become puckah or ripen; it is then stopped with cotton, and has a covering of moist clay put over it; this becoming hard, effectually prevents the scent from escaping. The price of this will be from 12 to 16 rupees. This is the best that can be procured.

To procure the pure attar or otto, the roses are put into the still, and the water passes over gradually as in the rose-water process; after the whole has come over, the rose-water is placed in a large metal basin, which is covered with wetted muslin tied over to prevent insects or dust getting into it; this vessel is let into the ground about two feet, which has been previously wetted with water, and it is allowed to remain quiet during the whole night. The attar is always made at the beginning of the season, when the nights are cool. In the morning early the little film of attar which is formed upon the surface of the rose-water during the night is removed by means of a feather, and it is then carefully placed in a small phial; and day after day, as the collection is made, it is placed for a short period in the sun, and, after a sufficient quantity has been procured, it is poured off clear, and of the colour of amber, into small phials. Another account of it is that in the manufacture of the purest attar of roses, a gallon or half a gallon of the best rose-water is kept in a large copper vessel in the cool night air, with a thin cotton covering over it. Before daybreak the extract floating over the surface of the water is carefully collected with a pigeon's feather, and placed in a phial. The next day fresh flowers are added to the same water, and it is again distilled; and the same process is continued for several days successively, till as much pure attar of roses is collected as is required. The whole quantity thus collected is kept in a phial and exposed to the sun for a few days; and as soon as the watery particles have evaporated, pure oil or attar of roses is left in the phial, which sells by weight at 125 to 130 rupees per tola. This sort of attar being costly, is generally made only to order, and the ordinary quantity purchased each year rarely exceeds five or six tolas. The rose-water left after the eighth or ninth distillation again comes into use, and is sold in the market as the best of its kind. It is, in fact, clear profit to the manufacturer, who is already amply repaid by the attar itself. The prime cost of a tola of attar is fairly estimated at Rs. 72, viz. cost of labour, Rs. 12; value of 50,000 rose-flowers at Rs. 120 per lakh, Rs. 60,—making the total Rs. 72. The margin

left to the manufacturer, after covering the cost of interest on outlay, does not fall far short of Rs. 40 or Rs. 50.

The ordinary rose-water is sold in huge spherical glass receptacles, called karabas, each containing 14 quart bottles. The average selling price of ordinary rose-water varies from 2 to 12 rupees per karaba, and in English quart bottles from 8 rupees to 8 annas each. The usual cost of labour for each distillation yielding 24 bottles is 1 rupee. During the season, numerous temporary rose stills are worked by traders from different parts of India. Consequently it is very difficult to make even an approximate estimate of the actual quantity produced, but it is supposed to be somewhere between 200 and 300 maunds.

Pure attar, when it has been removed only three or four days, has a pale greenish hue; by keeping it loses this, and in a few weeks' time it becomes of a pale yellow. The first few days' distillation does not produce such fine attar as comes off afterwards, in consequence of the dust or little particles of dirt in the still and the tube being mixed with it. This is readily separated, from its sinking to the bottom of the attar, which melts at a temperature of 81°. From one lakh (100,000) of roses, it is generally calculated that 180 grains, or one tola, of attar can be procured; more than this can be obtained if the roses are full-sized, and the nights cold to allow of the congelation. The attar purchased in the bazar is generally adulterated, mixed with sandal oil or sweet oil; not even the richest native will give the price at which the purest attar alone can be obtained, and the purest attar that is made is sold only to Europeans. Attars sell at from 50 to 90 rupees the tola of 180 grains.

Native stills are let out at so much per day or week, and it frequently occurs that the residents prepare some rose-water for their own use and as a present to their friends, to secure their being provided with that which is the best. The natives never remove the calices of the rose flowers, but place the whole into the still as it comes from the gardens. The best plan appears to be to have the calices removed, as by this means the rose-water may be preserved a longer time, and is not spoiled by the acid smell occasionally met with in the native rose-water. It is usual to calculate 100 bottles to one lakh of roses. The rose-water should always be twice distilled; over 10,000 roses, water may be put to allow of 16 or 20 bottles coming out; the following day these 20 bottles are placed over 8000 more roses, and about 18 bottles of rose-water are distilled. This may be considered the best to be met with. The attar is so much lighter than the rose-water, that previous to use it is better to expose the rose-water to the sun for a few days, to allow of its being well mixed; and rose-water that has been kept six months is always better than that which has recently been made.

At the commencement of the rose season, people from all parts come to make their purchases. There are about thirty-six places in the city of Ghazipur where rose-water is distilled. The distillers generally put a large quantity of sandal oil into the receiver; the oil is afterwards carefully removed and sold as sandal-attar, and the water put into carboys and disposed of as rose-water. At the time of sale, a few drops of sandal oil are placed on the neck of the carboy to

give it a fresh scent, and to many of the natives it appears perfectly immaterial whether the scent arise solely from the sandal oil or from the roses. Large quantities of sandal oil are every year brought up from the south and expended in this way. The chief use the natives make of the rose-water, or the sandal-attar, as they term it, is on the occasion of their festivals and weddings. It is then distributed largely to the guests as they arrive, and sprinkled in profusion in the apartments. A large quantity of rose-water is sold at Benares, and many of the native rajas send over to Ghazipur for its purchase. Most of the rose-water as soon as distilled is taken away, and after six months from the termination of the manufacture there are not more than four or five places where it is to be met with.

The bulk of the otto of roses of commerce is made in Turkey, where it is almost invariably adulterated with the oil of an Indian andropogon.

In India, all the perfumed oils obtained from all flowers are called *atr* or *otto*, but for making adulterated rose otto or *atr*, sandal-wood is well pounded and mixed with water, and then subjected to the usual process of distillation with roses. This gives a greater quantity of oily substance than could be expected from roses only. The same water is distilled over and over again, with an additional quantity of flowers as many fresh times as suits the fancy of the manufacturer. The value of this alloyed attar rises in proportion to the number of distillations, and the best of the kind is sold for 10 rupees per tola, down to the lowest rate of 2 rupees for the inferior sorts. The process of collection of this attar is the same as that of the other, the only difference between the two being in the admixture or not of sandal-wood. It is difficult to estimate with any degree of accuracy the quantity of alloyed attar annually produced in Ghazipur, for a large number of outsiders come every year, stop for the season only, and then carry off what they produce. Probably a maund would be near the mark; but the value cannot be accurately computed, owing to the great variety of rate for the different qualities manufactured.

Other perfumed oils are manufactured without resorting to distillation. Layers of jasmine or other flowers, four inches thick and two inches square, are laid on the ground and covered over with layers of sesamum or any other oil-yielding seed. These are laid about the same thickness as the flowers, over which a second layer of flowers like the first is placed. The seed is wetted with water, and the whole mass covered with a sheet held down at the end and sides by weights, and allowed to remain for eighteen hours in this form; it is now fit for the mill, unless the perfume is desired to be very strong, when the faded flowers are removed and fresh ones put in their place. The seeds thus impregnated are ground in the usual way in the mill, the oil expressed having the scent of the flower. At Ghazipur, the jasmine and *bela* are chiefly employed; the oil is kept in dubbers, and sold for about 2 rupees a seer. The newest oils afford the finest perfumes. The process here described is the same as that pursued at Bombay. In Europe, a fixed oil, usually that of the bean or morunga nut, is employed. Cotton is soaked in this and laid over layers of flowers, the oil being squeezed out so soon as impregnated

with perfume.—*Monthly Bombay Times*, 25th Nov. to 24th June 1850; *Dr. Jackson in Trans. Ben. As. Soc.* viii.; *Pioneer Newspaper*.

OTTOMAN TURK, the name by which the British designate the Turk tribe dominant in Turkey in Europe and Turkey in Asia,—a name derived from Othman, the founder of the dynasty. They were in their beginning a wandering horde, and even in the time of their greatest dominion they kept up much of the character. They have been a ruling order, a body ready to admit and to promote any one of any nation who chose to join them, provided that he accepted the Muhammadan religion. In this has lain their strength and their greatness, but it has been throughout the greatness of a conquering army bearing rule over other nations. The conquered nations could not throw off the yoke, because those among them who were their natural leaders were pressed into the service of their rulers. Their victories were won by soldiers who were really of the blood of the Greeks, Slavs, and other conquered nations. The chief posts of the empire, civil and military, were constantly held, not by native Turks, but by Christian renegades of all nations.

OUBASHI. TURKI. A commander of ten horsemen.

OUCHTERLONY, CAPTAIN, Madras Engineers. Wrote Report on Nellore, Cuddapah, and Guntur, Madras 1841; Statistical and Meteorological Report of the Neilgherry Hills, 1848; Bombay Almanac, 1850; Account of Chinese War, etc., Lond. 1844.

OUDH, a province of British India under the administration of a Chief Commissioner, who is also the Lieut.-Governor of the N.W. Provinces. It consists of twelve revenue districts, in four divisions, and it lies between lat. 25° 34' and 28° 42' N., and between long. 79° 44' and 83° 9' E. Four great rivers traverse or skirt the plain of Oudh in converging courses,—the Ganges, the Gumti, the Gogra, and Rapti, with the smaller rivers, the Babai, Girwa, Katna, Kauriali, Mohana, Sai, Sarda, Soheli, and Ul. All these, except the Ul, Katna, Gumti, and Sai, are hill streams descending from the Himalaya, and subject to sudden freshes. The *Rapti* is a rapid, second-class river, navigable for boats up to Bhinga. It is used for rafting timber in the rains. It swarms with crocodiles. The *Babai* is rapid and shallow in its upper course, and useless for navigation or for rafting. The *Girwa* is a mountain stream with a great fall, rushing in rapids and pools over a stony and sandy bed. It is useless for navigation. It is a branch of the Kauriali, from which it issues by percolation, and to which it is reunited lower down. The *Kauriali* is the largest of the affluents of the Ganges. Its discharge is 13,082 cubic feet per second. It is more than twice the size of the Ganges where it leaves the hills, and is navigable for boats throughout the year within British territory. It is called *Karnali* in the hills; *Kauriali*, after it enters the plains to its confluence with the *Sarju* a little below Bhurtpur; *Gogra*, thence to Fyzabad; *Sarju*, about Ajodhya; and *Dewa* or *Gogra* again below this, down to its confluence with the Ganges at Revelganj, near Chupra. The *Mohana* is the boundary of the British territory from Gwari Ghat to its confluence with the *Kauriali*, rather more than half its course in the plains. It is a shallow and rapid stream, not navigable, but

timber is floated down it in the rains to the Kauriali. This river swarms with crocodiles, both the magar or broad-nosed, and the gaurial or long-nosed species. The *Sarda* is a river about the size of the Ganges where it leaves the hills; 9 miles below, its discharge is 6416 cubic feet per second. It is the boundary between British territory and Nepal out of Oudh. It has lost the character of a hill stream, and flows in a sandy bed. The *Gumti* is a river rising in some rice fields, from which its head-waters appear to trickle. Its water is sweet, and its banks are cultivated throughout the province. It is navigable throughout the greater part of its course in Oudh, but it is extremely tortuous, and the navigation is impeded at Sultanpur by rocks. Oudh has no lakes, though some of the jhils are very extensive sheets of water. The country between the Gumti and the Ganges is well supplied with them. They lie in two parallel elevated hollows on either side of the Sai, and about midway between that river and the Gumti and Ganges respectively. They are drained by lateral nalé or branches, which fall mainly into the Sai, and which cause the occasional floods in that river after heavy rain. They are a striking feature of the country, stretching in a continuous series, on both sides of the Sai, from the Shahjahanpur boundary to that of Jounpur and Allahabad, and often connected when the rain has been heavy. They are covered with all kinds of wild fowl, and some of them are fairly stocked with snipe. Behti jhil, in Partabgarh district, is 14 square miles; and the Sandi, in Hardoi, is 10 square miles.

The Oudh forests are in three divisions. The first, or Khairigarh division, lies between the rivers Soheli and Mohana. The reserved trees are *Shorea robusta*, *Dalbergia sissoo*, *Cedrela toona*, *ebony*, *Diospyros melanoxylon*, *Conocarpus latifolia*, *Terminalia tomentosa*, *Acacia catechu*, and *Nauclaea cordifolia*. There is a very small tract under *sissoo* reserved for the use of the gun-carriage agency at Futteghur. Other trees are *Agle marmelos*, *Ailanthus excelsa*, *Bassia latifolia*, *Eugenia jambolana*, *Feronia elephantia*, *Ficus Indica*, *F. glomerata*, *Mangifera Indica*, *Melia azadirachta*, *Mimusops elengi*, *Terminalia belerica*, *Zizyphus jujuba*. *Shorea*, *cedrela*, *ebony*, *conocarpus*, and *terminalia* are found in the higher forest, called Bhabar, or, locally, Domar. The other trees are found on the lower ground or terai.

The terai stretches all along the frontier of the province immediately below the forest, and is low and moist. It is more or less settled or cultivated, but the crops are poor, and the country is unhealthy at the first, and there are great difficulties in the way of bringing the soil under cultivation. Throughout this district there are large grassy plains, where numerous herds of cattle are kept, and it is interspersed with old water-courses, the former beds of the rivers, now forming jhils, and swarming with alligators. In the Baraich and Kheereo districts, where the terai changes into the drier land, are two tracts, known as Dhowrera and Nanpara, which have an excellent breed of draught cattle. In the centre of this tract there are a few jhils, especially in the lower part of Sitapur, in Lucknow, and Barabanki, where the soil is more clayey, and the crops more irrigated and finer.

Oudh takes its name from Ajodhya, a sacred city of the Hindus, close to the town of Fyzabad. It was the capital of the ancient Solar dynasty, one of whose rulers was the deified Rama, worshipped throughout India. Also, a few miles north of the Gogra, at Colonelganj, the Hindus point out the burial-place of Agastya, one of the Solar race, a pioneer of civilisation, whom the Tamil people acknowledge as the founder of their literature. The earliest historical information points to Sravasti (Sahet Mahet) under a powerful ruler. In its capital Sakya Muni began his labours; and the city long remained a seat of learning for the disciples of the Buddhist faith. Six centuries after the first promulgation of the Buddhist religion, Sravasti contributed two of the great schools of doctors who attended at the synod convened by the Scythian conqueror Kanishka in Kashmir.

The first Muhammadan invasion of this province took place in the 11th century of the Christian era, when Sayad Salar Masa'ud, a relative of the great Mahmud of Ghazni, fought his way into Oudh at the head of a large army. The history of his invasion, his first success, and his final defeat and death at Baraich, are told in the Mirat-Masa'udi by Saadat Khan, the founder of its last Muhammadan dynasty, who (A.D. 1756) was appointed subahdar of Oudh in the voluptuous reign of Muhammad Shah. He was succeeded by his son-in-law, Safdar Jung, who died in 1753, and was succeeded by his son, Shuja-ud-Dowla, who was created vizir by the emperor Shah Alam. He was defeated at Buxar in 1764, and retreated to his own dominions. He then sought aid from the Mahrattas, but was again defeated, and he then threw himself on the generosity of the British. Shuja-ud-Dowla died in 1775, and was succeeded by his son. During his reign, an interview took place with Warren Hastings, from which a treaty in 1781 resulted. Asaf-ud-Dowla died in 1797, and his reputed son, Mirja Ali, succeeded, only to be displaced for Saadat Ali's eldest son, Shuja-ud-Dowla, with whom a treaty was made in 1812. He died 11th July 1814, and was succeeded by his eldest son, Ghazi-ud-Din Haider. Hitherto the family were styled vizir, but in 1819 the ruler was raised to the dignity of padshah or king. His son, Nasir-ud-Din Haider, succeeded him, but died in 1817, and was succeeded by his uncle, Muhammad Ali, who died in May 1842, and was succeeded by his son, Amjad Ali, who, on the 13th February 1847, was succeeded by Wajid Ali, whose misgovernment was such that, after repeated warnings, he was dethroned 6th May 1856. The British Government then assumed the sovereignty of Oudh, and the king was pensioned on 12 lakhs yearly. In the course of the connection of the British with this family, the family lent several large sums to the British.

Oudh has probably the densest population of any equal rural area in the world. The census of 1869 returned a total of 11,220,292 persons, spread over 23,992 square miles, yielding an average of 468 persons to the square mile. At the census of 1881, the N.W. Provinces and Oudh were taken together, and showed a joint population of 44,849,619, viz. Hindus, 38,555,121; Muhammadans, 6,162,900; Buddhists, 103; Christians, 47,673; Sikhs, 3644; Jains, 79,957; Parsees,

114; Jews, 101; and others, 6. Muhammadans are most numerous and powerful in the central districts of Lucknow and Barabanki. Their settlements there were mostly effected in the 13th, 14th, and 15th centuries, and they have generally continued to hold the lands they first acquired. Of the 55 talukdars of these two districts, 34 are Muhammadans, 23 belong to Barabanki, and 11 to Lucknow.

The higher classes of Muhammadans are, Sayad, Shaikh, Milki, Malik, Kuraishi, Pathan, Khandan, Rohilla, Moghul.

The Muhammadan converts from higher castes are, Bhale Sultan, Khanzada, Rajput, Mewati.

The higher castes of Hindus are thus given:—Brahman, Bengali, Jat, Jain, Kshatriya, Kyath, Khatri, Kashmiri, Marwari, Panjabi, Sikh, Saraok, Vaishya.

Of lower Hindu castes the most numerous are, Ahir, Bhunya, Bhat, Barheire, Chamar, Dhoobi, Kahar, Kori, Kurmi, Lohar, Lodha, Mali, Murao, Nao, Pasi, Teli.

Aborigines: Dom, Nat, Kanjar, Bhar, Tharu, Paharia, and others.

There are thirty orders of religious mendicants, amongst whom are Gosain, Jog, Byragi, Sadhu.

The Ahir are largely agricultural. The Kurmi and Murao are the best tenantry and most industrious cultivators. They form the backbone of the wealth of the province, and have fought well under British officers. The Pasi furnish the greater part of the rural police. Others, like the Bhar and Tharu, live in small isolated groups on the outskirts of the jungle or the hill country, and hold no communication with the outer world. The Nat and Kanjar wander like gipsies over the face of the country, with their small moveable villages or wigwams of matting and leaf-screens. The Kori and Chamar, weavers and leather-cutters, have lean, black, and ill-formed figures, and their stupid faces and their filthy habits reflect the long degradation to which they have been hereditarily subjected.

In consequence of the prevalence of female infanticide amongst certain Rajput tribes in Oudh, this race was carefully enumerated in 1871, and 439 clans or subdivisions of clans were found in 13,066 distinct villages, containing a population of 559,699 souls, of whom were 250,849 males and 184,623 females above ten years of age, and 84,200 boys and 6027 girls under ten. In the five years 1875 to 1879, there were 77,540 births among the proclaimed castes, of whom 39,984 were boys, and 37,556 were girls. They seem to generate more male offspring than female.

OUGEINIA DALBERGIOIDES. Benth.

Dalbergia Oojoensis, *Roxb. Fl. Ind.* iii. p. 221.

Tewas, HIND. Tunnus, MAHR.
Saan, Sandan, Tella motku, TEL.

A very valuable, good-sized timber tree, found in the Godavery forests, Jubbulpur, Nagpur, and up to 4000 feet in different parts of the Bengal (from the Jhelum) and Bombay Presidencies. In the Panjab and in the Siwalik up to 4000 feet, it is a smallish tree. The wood is hard, strong, and very tough, heavy and close-grained, and not unlike *Dalbergia sissoo*, but handsome, and said to be durable, not liable to warp, and not attacked with worms. It is much valued, and is used for building, ploughs, wheels, carriage poles, sugar and cotton rollers, and various other purposes,

and it makes very handsome furniture. In N. Konkan, a kind of gum kino is extracted from the bark, which is used by the natives in bowel complaints.—*Roxb.; Stewart; Beddome.*

OULA, a much-prized grass, which grows plentifully on the banks of the Longari, a river of Manchuria, in which the Tartars envelope their feet in lieu of stockings.

OURMIA, a lake in Persia, with saline water; specific gravity, 1.16507, and abounding in sulphates and muriates. It is an inland sea nearly 300 miles in circumference, situated in a volcanic country. The streams flowing into it abound in lime, which is deposited in large quantity in the form of a beautiful travertine. Lake Ourmia, like that of Lunar, contains potash, which Dr. Carter did not detect in the springs running into the latter.

OUSELEY, MAJOR, wrote on Washing of Gold-dust at Hera Khond, *Bl. As. Trans.* 1839, viii. 1057; Course of the Nerbadda, *ibid.*, 1845, xiv. part 1, p. 354; Antiquities of Jerguja, *ibid.* xxii. part 1, p. 65.

OUTRAM, GENERAL SIR JAMES, C.B., K.C.S.I., a distinguished, generous-hearted soldier of the Bombay army in the early and middle part of the 19th century; author of *Rough Notes*, or the Campaign in Sind and Afghanistan in 1838-39, London, 1840; also *Conquest of Sind*, 1846. He took an active part in this campaign, also commanded in the war against Persia in 1856-57, and in 1857-58 in the suppression of the rebellion and mutiny in Northern India. He rose in the 4th Regiment Bombay Native Infantry, and while still a young man, he encamped amongst a Bhil tribe, and induced them to adopt a settled life. He took part in the expedition to place Shah Shuja on the throne of Kabul, and when returning with Sir Thomas Willshire's brigade, he was present at the storm and fall of Kalat, and rode from there to Sonmiani from the 15th-16th November 1839, on a yaboo, in 7½ days, a distance of 355 miles. He was deemed a model for younger men to imitate; was styled the Bayard of the Bombay army, sans peur et sans reproche. Born 29th January 1803, he died at Pau, 11th March 1863. A statue was erected to his memory in London, and Sir Frederick Goldsmith wrote his life in two volumes.

OUVIRANDA FENESTRALIS, a plant of Madagascar, remarkable for the window-shaped structure of its leaves.

OVERLAND ROUTE. This line of communication between Europe and the E. Indie entered into the far-seeing projects of the first Emperor Napoleon, had been kept in contemplation by many a British statesman, and has been effected by a few men of spirit and enterprise. Lord Wellesley, before the close of the 18th century, had a line of the Company's cruisers running fortnightly between Bombay and Bussora, from which port letters were carried on by dromedary-post through Aleppo to Constantinople. Tidings of the victory of the Nile were sent by Nelson to the Bombay Government by way of Baghdad and Bussora. A few officers, from the year 1809 onwards, made their way to and from India by the Red Sea via Cosseir, including Sir Hudson Lowe. Sir John Malcolm came home by it in 1821. A definite proposal for a line of communication by that route was made by Mount Stuart Elphinstone as early as 1823, and renewed in

1826, but rejected by the Court of Directors of the English East India Company. In the year 1880, Lieutenant Waghorn, after reaching Bombay by the Red Sea route, was found still to uphold at a public meeting the route by the Cape, in preference to that by the Red Sea advocated by Mr. Taylor; but on the success of Commander Wilson's experimental trip in the *Hugh Lindsay* to Suez and back in the spring of the same year, he threw his undivided energy into the advocacy of the overland passage. A committee of the House of Commons having in the year 1884 formally reported in its favour, a regular mail service was organized by means of the E.I. Company's steam flotilla. The Indian navy, in the person of its energetic representative, Commander Wilson, claim the practical initiation of this important line of ocean communication.

OVIS. Mr. Blyth considers that there are fourteen species of this genus of mammals. M. Gervais reckons only six species. Of Asiatic species, Jerdon describes *O. ammon*, *cycloceros*, *nahura*, *Polii*, and *Vignei*, giving *O. burhel* as a syn. of *O. nahura*. Blyth mentions *O. Gmelini* of Armenia, *O. cylindricornis* of the Caucasus, and *O. nivicola*, *Eschscholtz*, of Kamtschatka. Mr. Hodgson regards the sheep as essentially an alpine animal. The Kirghiz breed has a great tail of 20 vertebral bones, so loaded with fat that a truck is occasionally made to carry it. The Karakul breed has a fine, curled, black, and valuable fleece. Gestation lasts 144 to 150 days.

Ovis ammon, Linn., the argali.

O. argali, Pallas. | *O. Hodgsoni*, Blyth.
O. ammonoides, Hodgk.

Hyan, Nuan, Nyan, Niar, Nyund, Cnow, Tib.

On the Tibetan side of the Himalaya. *Ovis ammon* stands from 4 to 5 feet high, and measures 7 feet from nose to tail. It is quite a Tibetan animal; is seen as high as 18,000 feet, and is seldom seen below 14,000 feet, except when driven lower by snow. Measurement of a male of five years, according to the markings on the horns, 6 feet 5 inches, viz. :—

From nose to base of horns, . . .	1 ft. 1 in.
Thence to insertion of tail, . . .	5 " 1 "
Tail to end of hair, . . .	0 " 3 "
Circumference of horn at base, . . .	1 " 4 3/4 "

Winter pelage, above deep brown, interspersed with grey, with a distinctly marked darker dorsal line passing (as in *O. montana*) in a narrow stripe through the disc on the croup, even to the tip of the tail. Sides mixed hoary or slaty grey brown; disc on the croup well defined and dirty white, the hair appearing as if rubbed. The throat and neck beneath to the breast, white, sprinkled with scattered brown hair; the hair long, bushy, and pendent, and from 6 to 7 inches in length, while that of the back is barely 2 inches, except on the dorsal line, where it is 3 inches, and on the ridge of the neck above 3 1/2 inches. Tail, above, brown, whitish at the sides, naked beneath. Under parts dirty white; medial line blackish, outside of the limbs with a dark list; lips whitish. Dr. Adams says it is more plentiful on the northern ranges. A few remain about the Tooskee lake and neighbouring hills during summer; the majority, however, migrate to Nubra as the snow melts. The finest horns are to be procured on the chaits. These cairns are mostly made up of horns of tame yak, wild sheep and goats, which are piled up in

the shape of a cone, with stones, pieces of quartz, pebbles, and sticks, to which rags are attached. When a Tartar arrives at one, he walks round it several times, repeating a prayer, of which 'Om mani padi om' forms the chief part. An adult male argali stands about 12 1/2 hands high at the shoulders.—*Blyth; Jerdon; Adams.*

Ovis aries, the common sheep, is subject to great variety, and many of its forms have been raised to the rank of species. Dr. Gray, in the British Museum Catalogue, enumerates no less than 33 varieties as under :—

(a) The *Spanish sheep*, *Ovis Hispanicus*, Linn.; called also the Merino sheep and the British middle-wooled sheep.

(b) The *common sheep* (*Ovis rusticus*, Linn.; *O. Gallica*, Desm.; *O. brachyurus*, Pallas; *O. leptura*, Schreb.); the hornless sheep (*O. Anglicana*, Linn.). Of this variety there are numerous forms, such as the Muggs, Shetland, Southdown, Old Lincoln, Romney Marsh, Cobbold, New Leicester, Cheviot, Old Teeswater, improved Teeswater, Dunky, Zetland, Orkney, Welsh mountain sheep, soft-wooled sheep of Wales, Wicklow mountain sheep, Kerry sheep, Exmoor sheep, blackfaced sheep, blackfaced Heath sheep, and the Rase or Roosh (*Ovis Polii*, Blyth).

(c) The *Barwall sheep* (*Aries barwal*, Hodgson); *Ovis barwal*, Hodgson; *O. ammonoides*, var. 1, Gray. It inhabits Nepal.

(d) The *Huniah sheep* (*Ovis hunia*, Hodgson), the Hunia, or blackfaced sheep of Tibet. Also a native of Nepal.

(e) The *Cago* (*Ovis cugia*, Hodgson), the Kago, or tame sheep of Kabul region, the Cago sheep of Gray. A native of Nepal.

(f) The *Seling*, a native of Nepal.

(g) The *Curumbar sheep* of Mysore.

(h) The sheep called Garar in India.

(i) The *Dukhm sheep*.

(j) The *Shaymbliar sheep* of Mysore.

(k) The *broad-tailed sheep* (*O. laticaudatus*, Erzl., Geoff., Mem. Egypt, Lesson, Comp. Buffon, x. p. 812; *O. laticauda*, *Platyceros Arabica*, Linn.; *O. Turcica*, *Charlet*; *O. cauda obesa*, *Ludolf*). It is a native of Barbary. There are several forms of this variety, of which the following are most prominent:—The fat-rumped sheep (*O. steatopyga*, Pallas, the Tartarian sheep of Bewick); the Persian sheep (*O. A. caudatus*, Geoff.); the fat-tailed sheep (*O. A. macrocerus*, Schreb.); the Aora fivel, or Abyssinian sheep; the Bucharian sheep (*O. Bucharica*, Pallas); the Tibetan sheep (*O. Tibetanus*, Fischer); the Cape sheep (*O. Capensis*, Erzl.); the sheep of Belkah.

(l) *Many-horned sheep* (*O. polyceratus*, Linn.). It is also called the four-horned ram, and the Dumba sheep. It is a native of Nepal.

(m) The *Puchia*, or Hindustan Dumba (*O. puchia*, Hodgson).

(n) *Caprovius vignei*. This genus embraces the Sha or Koch. It is the mountain sheep of the north of India, and is found in Tibet.

Ovis cycloceros, Hutton, Slater, Blyth.

O. Vignei, Bly., in part. Uria, Uriah, Koch, Kuch, PANJ.

The Panjab wild sheep is found all over the Salt Range of the Panjab, the Sulimani range, the Hazara, Peshawur. Mr. Blyth has pointed out that Captain Hutton's *Ovis cycloceros* had been priorly named by him *Ovis Vignei*.

Ovis cylindricornis, Blyth, a species of the

Caucasus. This is the least satisfactorily established of all the species in Mr. Blyth's monograph, resting on a communication from Colonel Hamilton Smith, relative to a species which must have been very different from either of those known to Mr. Blyth, though described from memory only by Colonel H. Smith, one of the most experienced of zoologists in the history of the ruminantia.

Ovis Gmelini, *Blyth*, a sheep of Armenia, identified with a species long ago rudely figured by the younger Gmelin, and the horn by Pallas; and Gmelin's description of the habits quoted, with further original information. Head figured in Taylor's plate, No. 9.

Ovis musimon, *Linn.*, the wild moufflon sheep of Corsica and Sardinia. Described by Mr. Blyth from life, and a further notice given in J. A. S., x. p. 878.

Ovis nahura, *Hodgson*, *Blyth*.

O. nahoor, <i>Hodgson</i> .	O. burhel, <i>Blyth</i> .
Blue wild sheep, . . . ENG.	Na, Sna, . . . LADAK, TIBET.
Burhel, Bharal, . . . HIMAL.	Nervate, . . . NEPAL.
Bharur, . . . "	Wa, War, . . . SUTLEJ.
Menda (male), . . . "	

Valley of the Sutlej, Sikkim, Bhotan. Described from specimens, amongst which was a hornless female, and clearly established as distinct from *O. ammon*.

Ovis Polii, *Blyth*, *Rass*; Roosh of Pamir; found on the plains of Pamir at 16,000 feet. Founded on a magnificent frontlet and horns brought by Lieutenant Wood from the Pamir steppe, combined with the notice quoted from Marco Polo, which refers undeniably to the same animal. Of the distinctness of this superb species, there can be no doubt whatever; and the frontlet is figured in Taylor's plate, figs. 1 and 2. It is to the east of Bokhara. The horns of one specimen were 24 feet long round the curvature, and 14½ inches in circumference at the base.

Ovis tragelaphus, *Pallas*, Aoudad of the Moors, found on the Atlas mountains of N. Africa. A well-known species.

Ovis Vignei, *Blyth*, Indian wild sheep.

O. montana, *Cunningham*. | Sha, Sha-poo, LAD., TIB.

Found in the Hindu Kush, the Pamir Range, west from Ladakh to the Caspian Sea. It is more like a deer than the moufflon of Europe. It is active and courageous. — *Jerdon's Mammalia*; *Gray's Catalogue*; *Hooker*, i. p. 244; *Blyth in Bengal As. Soc. Journ.*; *Adami's Naturalist in India*; *Jerdon*, p. 298; *Darwin*.

OWAIS-bin-AAMIR never saw Mahomed, but he so loved and revered that reformer, that he caused two of his front teeth to be extracted, because Mahomed had lost two of his front teeth in the disastrous battle of Ohod. Owais affirmed that all who entered his society and performed the mortifications enjoined upon them, would have these two teeth miraculously extracted during sleep, and on awakening find them under their pillows. The example set by him was followed by the khalifs Abubakr and Ali; and to the associations of recluses created by them all the various orders of darvesh which are now scattered over Muhammadan countries, trace back their origin. — *Osborn's Islam*, p. 92.

OWEN, CAPTAIN W. F., an officer of the British navy, who between 1822 and 1826 surveyed the southern and eastern coasts of Madagascar, the shores of Madagascar, and neighbouring islands.

Sickness overtook the ill-fated expedition, and nearly all the officers perished.

OWL.

Owlet,	ENG.	| Ghugu,	HIND.
Eule,	GER.	| Civetta,	IT.

The owls are the nocturnal tribe of the order Raptores, or birds of prey. They are arranged by naturalists under the family Strigidae of the order Raptores, and are subdivided into the sub-families Striginae, Syrniinae, Asioninae, Buboninae, and Surniinae.

Owls are found throughout the world, and many races, alike of Europe and of Asia, continue to entertain superstitious opinions regarding species of this nocturnal genus. The horror of the owl's nocturnal scream has been equally prevalent in the west as in the east. Ovid introduces it in his *Fasti*, L. vi. l. p. 139, but Tibullus in his *Elegies*, L. i. El. v. says Pliny, lxi. c. 93, doubts as to what bird produced the hated sound; and the details of Ovid's description do not apply to an owl. The women of India, hearing the hooting of the ghugu, shut the ominous sounds from their ears by wrapping their sarrees round their heads. And Shakespeare notices the common superstition, when he says:

'It was the owl that shrieked, the fatal bellman,
Which gives the stern'st good night.'

Of the nocturnal accipitres of Ceylon, the most remarkable is the brown owl, *Syrnium Indrani*, *Sykes*, which, from its hideous yell, has acquired the name of the devil bird. The Singhalese regard it literally with horror, and its scream by night in the vicinity of a village is bewailed as the harbinger of impending calamity. There is a popular legend in connection with it, to the effect that a morose and savage husband, who suspected the fidelity of his wife, availed himself of her absence to kill her child, of whose paternity he was doubtful, and on her return placed before her a curry prepared from its flesh. Of this the unhappy woman partook, till, discovering the crime by finding the finger of her infant, she fled in frenzy to the forest, and there destroyed herself. On her death she was metamorphosed, according to the Buddhist belief, into an ulama, or devil bird, which still at nightfall horrifies the villagers by repeating the frantic screams of the bereaved mother in her agony. Mr. Blyth, from Calcutta, wrote to Sir J. E. Tennant as to the *Syrnium Indrani*, *Sykes*, mentioning that there are some doubts about this bird. There would appear to be three or four distinguishable races, the Ceylon bird approximating most nearly to that of the Malayan Peninsula. Mr. Mitford, of the Ceylon Civil Service, also regards the identification of the Singhalese devil bird as open to doubts. He says, 'The devil bird is an owl. I never heard it until I came to Kornegalle, where it haunts the rocky hill at the back of Government House.'

The unpleasant laugh of the fish owl of Ceylon (*Ketupa Ceylonensis*) is known; no sound grates harsher on the ear, or is more calculated to bring back recollections of hobgoblins, than the loud hollow voice of this otherwise fine bird; nor is it less startling to creep through the bush and come suddenly on an individual moping at mid-day on a branch overhead, flashing his large orange eyes full on your face, as with outstretched wings he snaps his bill, or, hissing defiance, makes straight

off to the nearest cover, pursued by crested bulbuls, jays, etc. This species is not often seen, its mid-day haunts are in impassable parts of the jungle.

The Indian owl (*Athene brama*) is numerous in the Ceylon jungles.

The Himalaya owl (*Athene cuculoides*) is common in the woods and jungle, and is diurnal in its habits so far that Dr. Adams killed one at mid-day with a rat in its talons; the bird is, however, most often seen at dusk. Its favourite food consists of mice, shrews, and large coleopterous insects.

The pretty pigmy owlet (*Athene Brodiei*) is often found in bushes. It is a diminutive little creature. Its call is measured, and composed of two notes frequently repeated. Its egg is white, and generally laid in the hollow of a tree, without any preparation whatever.

The typical owls, of which the barn owl of Europe, *Strix flammea*, is the type, are nocturnal in their habits, and are often called screech owls from the unearthly screechings of their call.

The Indian screech owl, *S. Javanica*, *de Wurm.*, of a pale-yellow buff colour, is found throughout Ceylon, India, Burma, and Malaya. It differs somewhat from the barn owl of Europe. It roosts during the day, comes forth at dusk, and hunts entirely at night, living on rats, mice, shrews, etc. It breeds in holes of trees and buildings. Its names, *Karaya*, *Karail*, *Buri churi*, *HIND.*, *Chao-pitta*, *TEL.*, and *Chao-kurani*, *TAM.*, mean evil bird, and death bird.

The grass owl, *St. candida*, *Tickell*, above of a tawny yellow colour, is found sparingly throughout the greater part of India. It lives almost exclusively in long grass, from which it rises heavily, flies a short distance, and drops suddenly into the grass.

Strix Rosenbergii and *S. Javanica* are owls of the Malay Archipelago, and the latter is in all the islands up to Lombok.

The bay or chestnut-coloured screech owl, the *Phodilus badius*, *Horsfield*, occurs in Nepal, Sikkim, Burma, Malaya, and the E. Archipelago. The natives believe it is on good terms with the tiger.

The sub-family *Syrniinae* comprise the hooting owls. They are birds of rather large size, living in woods and groves, and nocturnal in their habits. The *Syrnium Indrani*, *Sykes*, the brown wood owl, is 19 to 21 inches long, is found in Ceylon, throughout British India, Burma, and Malaya. It is of nocturnal habits. It is the devil bird of Ceylon.

The Nepal brown wood owl (*Syrnium Newarensis*, *Hodgson*), 2 feet long, occurs in Ceylon, S. India, Central Nepal, N.W. Himalaya, and the Malayan Peninsula.

The mottled wood owl is the very beautiful plumaged *Syrnium Sinense*, *Latham*, of a rich tawny colour, found in wild wooded districts throughout India, but not yet found in Ceylon and Burma. It has a loud, harsh, dissonant hoot.

Syrnium seloputo, of Burma and Malaya, has even more beautiful plumage.

Syrnium leptogrammica, *Temm.*, is from Borneo. *Syrnium nivicolium*, *Hodgson*, is the Himalayan wood owl, mottled dark-brown and fulvus. It is found above 7000 feet up to the snow-line in the Himalaya.

The sub-family *Asioninae* has the genus *Otus*.

Otus vulgaris, *Fleming*, the long-eared owl of Europe, Afghanistan, Kashmir, and Nepal, frequents woods, and feeds on mice, moles, and beetles.

Otus brachyotus, *Gmelin*, is the short-eared owl of great part of N. America, and over all the old world; in India is found in long grass, hunting chiefly at night, though it flies well by day. In India it is migratory, coming in at the beginning

of the cold weather, and leaving about March. Its call is a double or treble hoot, not unlike that of the hoopoe.

The sub-family *Buboninae* comprises the genera *Urrua*, *Huhua*, *Ketupa*, *Ephialtes*, and *Scops*, the great horned owls, or eagle owls, also the *scops* owls.

Urrua Bengalensis, *Franklin*, the rock horned owl, 22 inches long, is found throughout Afghanistan, India, and Ceylon, wherever it can get rats, birds, lizards, snakes, crabs, and large insects, generally in broken rocky ground, but also in dense groves or gardens. Its cry, *durgoon*, *durgoon*, is a loud solemn hoot.

Urrua Coromanda, *Laham*, is the dusky horned owl, 22 inches long, found in all India. It frequents thick groves and forest jungle.

Huhua Nepalensis, *Hodgson*, the forest eagle owl, of a dark-brown colour, and 22 inches long, occurs in Nepal, S. India, and Malaya.

Ketupa Ceylonensis, *Gmelin*, the brown fish owl, 21 to 23 inches long, is found throughout Ceylon, India, Burma, perhaps to China, frequenting forests, groves, and gardens, coming forth at dusk to feed, generally making its way to a tank, brook, or river, occasionally uttering its dismal cry, a repulsive laugh like *haw-haw*, *haw-ho*. It is said to kill even cats.

Ketupa flavipes, *Hodgson*, the tawny fish owl, is confined to the Himalaya. It is constantly found on the banks of rivers, and flies well by day.

Ketupa Javanensis, *Lesson*, and *K. Ceylonensis*, extend from Ceylon and Arakan to Java.

Ephialtes pennatus, *Hodgson*, the Indian *scops* owl, is supposed by some to be the *S. zorca* of Europe. It is found throughout India and Ceylon, the Himalaya, Burma, and China.

Ephialtes Lempiigi, *Horsfield*, is the large *scops* owl of all India, Ceylon, Burma, Malaya, and China, found in forests.

Scops rufescens, *Horsfield*, a large owl of Malaya, Japan, Celebes, and Philippines.

Scops gymnopodus, *Kaup*, is said to be from India.

The sub-family *Syrniinae* has the genera *Athene*, *Glaucidium*, *Ninox*, *Syrnium*.

Athene brama, *Temm.*, the spotted owl of Ceylon, India, Panjab, Burma, Persia, and all Asia, is found in dense forests. It is of an earthy grey-brown colour, each feather with a white spot. It is 8 or 9 inches long.

Athene radiata, *Tickell*, the jungle owl of all India; is probably the *Athene cuculoides*, *Philips*, of N.W. Provinces.

Athene Malabarica, *Blyth*, the Malabar owl, 8 inches long, of Travancore, Cochin, and S. Provinces of Malabar.

Athene castanoptera, *Horsfield*, Malaya.

Athene castanopus, *Blyth*, Ceylon.

Athene cuculoides, *Vigors*, the large barred owl, 9½ or 10½ inches long, occurs in the Himalaya, Panjab, Assam, Arakan, Tenasserim to China. It feeds on mice, rats, beetles.

Glaucidium Brodiei, *Burton*, the collared pigmy owl, is found at from 3000 to 4000 feet throughout the Himalaya. It is 6½ inches long.

Ninox scutellatus, *Raffl.*, the brown hawk owl, 12 inches long, is found in the wooded parts of all India, extending into Burma, Malaya, China, and Japan; also said to occur in Madagascar. It frequents the skirts of the thick forests also.

Ninox Borneensis, *Schlegel*, and *N. Japonica*, *Schlegel*, of Borneo and Japan.

—*Jerdon's Birds of India*; *White's Nat. Hist. of Selborne*; *Tennant's Nat. Hist. Ceylon*.

OWUND KARI. MAHR. A person cultivating and in a village, but residing in another village.

OX.

Bakara,	ARAB.	Bue,	IR.
Bosuf,	FR.	Buez,	SP.
Ocha,	GER.	Mar,	TAM.
Bail,	HIND.	Ukyus,	TURK.

The ox is one of the Bovinæ, a sub-family of the family Bovidæ, of the order Ruminantia. The order Ruminantia may be shown as under:—

Cervidæ.	Bovidæ.	Hemitraginæ.
Cervus.	Antilopinæ.	Capra.
Bucervus.	Portax.	Ovis.
Rusa.	Tetraceros.	Bovinæ.
Axis.	Antilope.	Bos.
Cervulus.	Gazella.	Gavæus.
Moschus.	Caprinæ.	Bubalus.
Meminna.	Nemorhædus.	

The Bovinæ, called cattle, also horned cattle, to which this notice is restricted, have always horns in both sexes, usually inclining upwards or forwards, with a large and broad muffle, a moderately long tail, no eyepits, but with four mammae. The sub-family Bovinæ is divisible into three groups, the Bisontine or bisons, the Taurine or oxen, and the Bubaline or buffaloes.

The *Bisontine* group comprise the bison of Europe and N. America, the musk ox of Arctic America, and the yak or Pocephagus grunniens of Central Asia. The true bison of Europe, *Bison urus* or the Aurochs, has a broad forehead, long limbs, and shaggy mane. The yak, called in Tibetan Brong-Dhong, in Hindi the Banchowr or wild bull, is found wild on the northern side of the Himalaya, but it has been domesticated, and called the Chaori-gao.

The *Taurine* group has been subdivided by Blyth into the Zebu, or humped domestic cattle, the *Taurus*, humpless cattle with cylindrical horns, and *Gavæus*, humpless cattle with flattened horns, peculiar to South-Eastern Asia. They have all thirteen pairs of ribs. It is to the Zebus that the common humped cattle of India belong; they have run wild in Mysore, near Nellore, in Oudh, Mozuffurnuggur, Rohilkhand, and Shahabad. Near Nellore, the country they frequent is much covered with jungle, and intersected with salt-water creeks and marine lagoons, and the cattle are as wild and wary as the most feral species. They are of large size, and their horns are long and upright. The genus *Taurus* contains the cattle of Europe with cylindrical horns, including the feral race of Chillingham. The flat-horned *Taurines* of Blyth include the genera *Gavæus*, *Gavæus gaurus*, *Jerdon*, the Gaur or Gauri-gao of all India, the Pyoung of the Burmese; also the Gayal or Mit'hun, the *G. frontalis*, compared with the Gaur, a heavy, clumsy-looking animal of the hilly tracts to the east of the Brahmaputra, and at the head of the valley of Assam, the Mishmi hills and their vicinity, and probably extending north and east into the borders of China. It is extensively and easily domesticated, and has bred with the common Indian cattle.

The Ban-teng or Burmese wild cow, *Gavæus sondaicus*, the Tso-ing of the Burmese, extends from Chittagong through Burma, the Malayan Peninsula, and Siam, into Borneo, Java, and the larger islands of the E. Archipelago. This species resembles the Gaur more than the Gayal, and it wants the dewlap. The young and the female are red.

The *Bubaline* group, the buffaloes, of the genus *Bubalus*, have large, almost horizontal, angular horns, inclining backwards and sometimes downwards, with a large and spare muffle and thirteen pairs of ribs. The wild buffalo, the *Bubalus arni*, is largely domesticated, and used for all the purposes of an agricultural population. But it is

found in the north and east of Ceylon, from the Godavery to Midnapur and Raipur, in the plains of Lower Bengal as far as Tirhut, and Oudh to the Terai and Bhutan, inhabiting the margins of forests in the most swampy sites. It lives in large herds, but in the rutting season the most powerful males lead off and appropriate several females. They rut in autumn, and the female gestates ten months, producing one or two in summer. The domestic buffalo is often lean and angular; they are used for draught and as milch cattle. But the wild buffalo is uniformly in high condition, and the bull is of such power and vigour as by his charge frequently to prostrate a well-sized elephant. There is an African species, *B. brachyceros*, *Gray*, and a Cape buffalo, *B. cafer*, with horns so large as nearly to cover the forehead. In the E. Indies the buffalo is generally used in ploughing up the muddy lands in which rice is grown, often for carriage, rarely for draught for long journeys. The Binjara and other migratory grain merchants, who travel over several hundred miles of India, collecting grain and carrying salt, invariably use the bullock, never the buffalo; and a handsome bullock, ornamented with streamers and a bell, leads the herd. They are the only race that subjects the cow to labour.

Oxen are used by the peasantry of the E. Indies both in ploughing and in tempering the mud in the wet paddy fields before sowing the rice; and when the harvest is reaped they 'tread out the corn,' after the immemorial custom of the east. In many parts of British India and in Burma, the cattle are greatly exposed to the weather. In other parts, as in the Cuddapah district, the utmost care is taken of them as to housing and food. The wealth of the native chiefs and landed proprietors in Ceylon frequently consists in their herds of bullocks, which they hire out to their dependents during the seasons for agricultural labour; and as they already supply them with land to be tilled, and lend the seed which is to crop it, the further contribution of this portion of the labour serves to render the dependence of the peasantry on the chiefs and headmen complete. From their constant exposure at all seasons, the cattle in the E. Indies, both those employed in agriculture and those on the roads, are subject to devastating murrains, that sweep them away by thousands. So frequent in Ceylon is the recurrence of these calamities, and so extended their ravages, that they exercise a serious influence upon the commercial interests of the colony, by reducing the facilities of agriculture, and augmenting the cost of carriage during the most critical periods of the coffee harvest. A similar disease, probably peripneumonia, frequently carries off the cattle in Assam, Burma, and other provinces and districts of India; and there, as in Ceylon, the inflammatory symptoms in the lungs and throat, and the internal derangement and external eruptive appearances, seem to indicate that the disease is a feverish influenza, attributable to neglect and exposure in a moist and variable climate, and that its prevention might be hoped for, and the cattle preserved, by the simple expedient of more humane and considerate treatment, especially by affording them cover at night. The labour for which they are best adapted, and in which, before the opening of roads in India, these cattle were formerly employed, is in traversing the jungle

paths of the interior, carrying light loads as pack oxen in what in Ceylon is called a *tavalam*, a term which, substituting bullocks for camels, is equivalent to a 'caravan.' The persons engaged in Ceylon in this wandering trade are chiefly Muhammadans, locally called Moors; and the business carried on by them consists in bringing up salt from the Government depôts on the coast to be bartered with the Kandyans in the hills for 'native coffee,' which is grown in small quantities round every house, but without systematic cultivation. An ox will work well seven years, if taken care of.

In Ceylon, to every herd of cattle there is a sacred bull, who is supposed to exert an influence over the prosperity of the flocks; his horns are ornamented with tufts of feathers, and frequently with small bells, and he invariably leads the great herd to pasture. On starting in the early morning from the cattle kraal, the natives address the bull, telling him 'to watch over the herd, to keep the cows from straying, and to lead them to the sweetest pastures, so that they shall give abundance of milk,' etc.—*Tennant's Ceylon*; *Jerdon, Mammals*.

OXALIC ACID, *Sauerkleesäure* of the Germans, a vegetable acid, found in considerable quantity in sorrel and rhubarb. It is used in calico printing, and by straw hat makers. It is an object of considerable importance in Switzerland, where it is prepared from the juice of wood-sorrel. Oxalic acid is obtainable from the salt in the leaves of gram, *Cicer arietinum*, the genera *Oxalis*, *Rumex*, *Acetosella*, and other plants. Accidents have frequently occurred from its being administered instead of Epsom salts, which it resembles in appearance.—*Faulkner*; *Taylor*; *Waring*; *Royle*.

OXALIDACEÆ. *Lindl.* The wood-sorrel tribe comprises the genera *Averrhoa*, *Biophytum*, and *Oxalis*. The genus *Oxalis* includes upwards of 200 species, excepting about half-a-dozen (the delicate little wood-sorrel [*O. acetosella*] being one of them) peculiar to S. America and the Cape of Good Hope. Several Peruvian and Chilian species have fleshy roots or tubers, used as potatoes. *O. tuberosa* is extensively cultivated in Bolivia, and might be introduced into India. The fresh tubers are acid, but, after exposure to the sun for a week or ten days, they lose their acidity, and become but little inferior to the potato. Some of the pinnate-leaved species exhibit irritability on the application of a stimulus.

Oxalis acetosella, *Linn.*, wood-sorrel.
Tsah-tsang-te'sau, CHIN. | *T'sau-mu*, . . . CHIN.
Tso-tsang-te'sau, . . . "

A small perennial plant, with a subterranean root-stock consisting of many scaly joints, of the N.W. Himalaya, at from 3500 to 9000 feet. It has a pleasant acid taste, dependent on the presence of oxalic acid, and is frequently used in salads; its flavour approaches near to that of lemons or tartaric acid, with which its medicinal effects also correspond, as it is esteemed a refrigerant anti-scorbutic and diuretic. The expressed juice, evaporated and set in a cool place, affords a crystalline salt, which may be used whenever vegetable acids are wanted. It is sold in the shops under the name of essential salts of lemons, and is employed to take iron-moulds and ink-spots out of linen.

Oxalis corniculata, *Linn.*, Indian sorrel.

<i>Oxalis monadelphæ</i> , <i>Roxb.</i>	<i>Oxalis pusilla</i> , <i>Salis.</i>
Hemenbab, Hembra, ANAB.	Dantashata, . . . SANSK.
Homadmad, . . . "	Ambashta, Amlika, . . . SIAM.
Chuka-tiputti, . . . BENG.	Amla-loniha, . . . "
Umbuti ki baji, . . . DUKH.	Trawake, . . . SUTLEJ.
Ambuti, Amrul, . . . HIND.	Pullari kiray, . . . TAM.
Chukha, Khatta-Mitha, . . . "	Pullachinta, . . . TEL.
Shuklika, Chukrika, SANS.	Surohi, . . . TR.-IND.

It is a native of Europe, particularly in Spain, Italy, and Greece, also of India, Malay Islands, Japan, Mexico, N. America, and England. The flowers are yellow. The flowers of the N. American plant are larger than those of the European. This species is common all over India, and in the Himalaya up to 8000 feet. It possesses exactly the same properties, and yields the same products, as the European sorrel. The small leaves, tender shoots, and flowers are given in electuaries by the Hindus as a cooling medicine in fevers, to the extent of two teaspoonfuls daily; is also used in flatulent indigestion. In Peninsular India, it is a common weed on lawns and in gardens, and is used by the natives in making chatni; and in curries it is a good substitute for lime-juice or tamarind, imparting a peculiar acid taste. In Dacca, washermen use its juice to remove iron marks.

Oxalis sensitiva, *Linn.*

<i>Biophytum sensitivum</i> , <i>Roxb., D.C., Wight.</i>
Bun maranga, . . . BENG. | Toda vadi, . . . MALEAL.
Lak-chana, . . . HIND.

Common in India and Java; the plant beaten up and mixed with gingelly oil is given in gonorrhea; and mixed with butter is applied to wounds and boils.—*Dr. Weddell*; *Smith*; *Waring*; *Ainslie*; *Roxb.*; *O'Sh.*; *Gen. Med. Top.*; *Jaffrey*; *Useful Pl.*

OXENDON. Christopher and Sir George Oxendon, servants of the English E.I. Company; the former died in 1659, and the latter in 1669.

OX-GALI, Ox-bile.

Niu-tau, . . . CHIN.	Fel-bovis, Fel-tauri, LAT.
Pit, . . . HIND.	Pittam, Pittamu, TAM.TEL.

An inert substance, but used by Asiatics medicinally.

OXIDE of LEAD, Massicot or Murdar sang. The manufacture of this was introduced at Jagadri by Kashmiri and Bakal, two attasellers, etc., who came from Jalalabad; they manufactured it in secret, and would not let others know the process. This is said to be made at Lahore and Jagadri, and it might be well employed in making lead plaster (strapping) with some of the country oil; other preparations of lead also might be manufactured from it.—*Powell's Handbook*.

OXLEYA XANTHOXYLA. This tree is a native of Australia, and attains a height of 100 feet. The wood is yellow, and employed for building boats. It is called yellow-wood.—*Eng. Cyc.*; *Hogg's Veg. Kingd.*

OX-TAIL. The tails of the ox and of the yak are used in India as whisks; in places as standards. In Indian wars, the ox-tail and umbrella were not unfrequently placed over some chief of consequence, to divert attention and protect the king from danger. In Shakespeare's description of the battle of Bosworth Field, Richmond, in assailing the usurper, exclaims, 'Three have already fallen who wore that crown.'—*Tod's Travels*, p. 201.

OXUS, the Jihun of the Arabs, and Amu, Abi-ma, of the Persians. North-east of Bokhara is a lofty range of mountains which runs east-

wards to the borders of the Khanate of Khorakand, where it converges at right angles to the Bolor or Belur Tagh. This is called the Ak-Dagh, or white mountains, and seems to mark the northern boundary of the high land of Pamir, on the west side of which the Oxus takes its rise. It collects all the drainage of the Great Pamir, through two main head-streams, the Panja or southern rising in Lake Victoria (13,900 feet), discovered in 1838 by Wood; the Ak-Su (Murghab) or northern, flowing apparently from Lake Barkal Yasin (13,100 feet), and receiving the outflow of Lake Kara-Kul above the junction. The united stream flows westwards towards Balkh, from which it runs north-west to the south coast of the Aral Sea. Lieutenant Wood penetrated thither in mid-winter. On reaching a spot elevated 14,400 feet above the level of the sea, some of his escort refused to proceed farther; upon which he pushed forward with the remainder, through deep new-fallen snow. As he neared the head-waters of the Oxus, the ice became weak and brittle. After quitting the surface of the river, he travelled about an hour along the right bank, and then ascended a low hill which apparently bounded the valley to the east; on surmounting this at 5 P.M. of the 19th February 1838, he stood on the Bam-i-Duniyah, or 'Roof of the World,' while before him lay stretched a noble frozen sheet of water, from whose western extremity issued the infant Oxus. This fine lake lies in the form of a crescent, about 14 miles long from east to west by one mile in average breadth. On three sides it is bordered by swelling hills about 500 feet high, while along its south bank they rise into mountains 3500 feet above the lake, or 19,000 feet above sea-level, covered with perpetual snow, from which never-failing source the lake is supplied. From observations made at the west end, he found the latitude to be $37^{\circ} 27' N.$, and long. $73^{\circ} 40' E.$, and the elevation, as deduced from the boiling point of water, 15,000 feet.

In the upper part of its course it is called the Wakkan, also Ab-i-Panj, the latter being from a belief that it is formed by the junction of five streams. At the village of Isar, in lat. $37^{\circ} 20'$, at an elevation of 10,000 feet, Lieutenant Wood found two rivers joining, one of which he traced to Lake Sir-i-Kul, at an elevation of 15,000 feet, on the Pamir table-land. It then flows through Wakkan, encloses in an angle Badakhshan, of which it forms the natural frontier, and passes alongside the desert within 40 miles of the city of Balkh. 80 miles below this Afghan outpost is Khojah ferry. At Kunduz, 600 miles from Khiva, the navigability of the river is supposed to cease. Sir Alexander Burnes describes the channel as being 'straight and singularly devoid of rocks, rapids, and whirlpools, and rarely impeded even by sandbanks. The depth varies from 6 feet to 20 feet, with an average current of $3\frac{1}{2}$ miles an hour.' In the spring the river is liable to be flooded with the snows of the Hindu Kush, and in the winter the ice collects on the surface near the Aral sufficiently thick to permit of caravans crossing over it. In its course through the desert from Khulm to the frontiers of Khiva, the Amu fertilizes a narrow strip of country on either bank.

The fruitful oasis of Khiva, with its canals 50 feet broad, its rows of stately elms, its orchards

of mulberry trees, apples, apricots, and cherries, and its lovely gardens, is simply a slice of the desert irrigated by the Oxus. Settlements would in time grow alongside the stream if a check could only be placed on the predatory nomades. What Central Asia might be under a secure and peaceful rule, we have evidence in the ruins of Balkh, 20 miles in circuit; in the remains of Merv, which once boasted of a million inhabitants; in the walls of Samarcand, which in ancient days were manned by 100,000 men; and in the 2000 villas which marked a suburb of the city of Bokhara.

According to Sir Henry Rawlinson, the Oxus, from B.C. 600 to A.D. 500, with the Jaxartes, emptied itself into the Caspian, and the Aral as an inland sea did not then exist. Even in A.D. 570, the Aral was only a reedy marsh; and it was not till quite thirty years later that the influx of the Oxus caused it to swell out in the hollow in which it now lies. In 1224 the Oxus again forced its way into the Caspian, and the Aral dried up once more, exposing the ruins of cities which had been swallowed up during its previous expansion. In 1330 the river was described by an eastern traveller as flowing into the Caspian close to the mouth of the Atrek; and the accuracy of this is attested by the remains of the bed which General Abbott saw in 1840. During the whole of the 14th century the Oxus poured itself into the Caspian, while its fellow-stream, the Jaxartes, was swallowed up in the sands. In the 15th century, Ruy Gonzalez de Clavijo describes it as being a noble river, 'three miles in breadth, very deep, and traversing with wonderful force a flat country before falling into the Caspian.' In 1720 a Dutch geographer speaks of the river as having two branches, one flowing into the Caspian and the other into the Aral. Travellers like Anthony Jenkinson, English officers employed last century in Persia, and Russian explorers of recent date, one and all are agreed that the Amu Darya up to very recent times flowed into the Caspian Sea. The river never confined itself to any particular outlet, but during a series of centuries scored one opening and then another in the soft, sandy cliffs that stretch between Persia and Krasnovodsk. Strabo and Pliny both mention that in the early days of the Christian era the merchandise of India used to come down the Oxus to the Caspian, whence it was conveyed up the river Kurr on the one side of the Caucasus, and down the river Rion on the other, till the Black Sea and Europe were finally reached. The deflection of the Oxus is due solely to that normal habit of changing its bed which characterises not only the Oxus but the Syr Darya also, and most of the other and minor rivers of Central Asia. The sands stretching between Persia and Siberia are so soft, and the volume of water poured down from the buttresses of the Pamir so vast at certain seasons of the year, that it is a most natural thing for a river to leave its cutting, and plough a fresh passage through the desert. If the course of the stream be controlled, the merchandise of China and Tibet might once more flow down with the current to the Caspian, thence to be distributed by Russia over Europe. Goods shipped into lighters at Cronstadt could circulate along the northern canal system and the Volga to Krasnovodsk, and thence could be transported up the river Oxus,

either via the Syr Darya branch to Tashkend, Khokand, and Kashgaria, or via the parent stream to Khiva, Bokhara, and Afghanistan.

Alexander crossed the Oxus on inflated skins, but there are now numerous boats at the ferries of Khojah Saleh, 800 yards wide; at Char-Jui, leading to Merv, 650 yards wide; at Kirki, where Vambéry crossed on his way to Herat. The boats used on the river are built alike at both ends, with bows projecting very much, so as to stretch easily from the shallows to the shore. They are made of the squared logs of a dwarf jungle tree, fastened together with iron clamps. Most of them attain a length of 50 feet, with a beam of 18, a depth of 4 feet, a displacement of barely 12 inches of water, and a tonnage of about 20 tons, rendering them capable of conveying 150 soldier passengers. Notwithstanding their clumsy build, they are strong and durable, and both Timur and Nadir Shah employed them for making bridges, over which their hosts passed in safety. The river is said to have been known to the Arabs as the Jihun, derived from the Turki O'gus or O'kus, a river. The Greek Okos has been supposed to be from the Wakhsh or Uakhsh.—*Asia, by Keane and Temple*, p. 403; *Vambéry's Bokhara*, p. 27; *Trotter's Central Asia*; *Wood*.

OXYBELES LUMBRICOIDES, a fish of the Indian seas, which takes up its quarters in the star-fish called *Asterias discoida*.

OXYCANUS, a prince of the Panjab, mentioned by Arrian and by Curtius, whose two chief cities were taken by Alexander. Curtius makes Oxycanus the king of people named Prasti, and states that Alexander captured his chief city after a siege of three days. Diodorus and Strabo call the king Portikanus. General Cunningham identifies Musicanus with the great mound of Mahorta on the bank of the Ghar river, 10 miles from Larkana. Masson describes it as the remains of an ancient fortress, on a huge mound named Maihota. At present Mahorta is within a few miles of the river; but in the time of Alexander, when the Indus flowed down the bed of the Nara, the nearest point of the stream was at Alor, from which Mahorta was distant 45 miles to the south of west. Hence Alexander was obliged to leave his fleet, and to march against Oxycanus.—*Cunningham's Ancient Geog. of India*, p. 259.

OXYGEN. The property of absorbing oxygen belongs to fresh wood, whether taken from the twig or from the inner trunk of a tree. When fine chips of such wood are moistened and placed under a jar of oxygen, the gas diminishes in volume. But wood, dried in the air, and then moistened, converts the oxygen into carbonic acid without change of volume. When villages situated on the banks of rivers become inundated with floods, this property of wood gives rise to much disease. The wood of the floor and rafters of the building become saturated with water, which evaporates very slowly. The oxygen of the air is absorbed rapidly by the moist wood, and carbonic acid is generated. The latter gas exercises a directly pernicious influence, when present in the air to the amount of 7 or 8 per cent.

OXYLOPHUS MELANOLEUCOS. *Swainson*. The edolio or pied crested cuckoo has a piping

well-known call, and in the evening sports like a swallow. The crested cuckoos during the rainy season are parasitical upon the nests of the Satbhai. It is the *Coccyzus melanoleucos* of Gmelin.

OXYRIA RENIFORMIS, the mountain sorrel, is found in the Sutlej valley between Rampur and Sungnam, at an elevation of 6000 to 8000 feet. Used as a native remedy.—*Clegh*.

OXYSTELMA ESCULENTUM. *Roxb., Br.*

<i>Asclepias rosea, Roxb.</i>	<i>Periploca esculenta, Orr.</i>
Gharat, Gani, . . . of RAVI.	Pala kura, . . . TKL.
Chiru pala, . . . TKL.	Pinna pala, . . . "
Dudi pala, Nela pala, . . .	So'pa chettu, . . . "

A twining, perennial, deciduous plant; flowers in the rains, large, white, with a slight tinge of rose colour, and streaked with purple veins; texture, thin and delicate. Common in India on the banks of rivulets; used by the natives in decoction as a gargle in aphthous ulcerations of the mouth, and in sore throat. Cattle eat the roots. The fruit is eaten.—*Roxb.; Riddell; Royle; O'Sh.; Stewart*.

OXYTENANTHERA THWAITESII. *Munro*.

This plant—*Dendrocalamus monadelphus, Thw.*; *Watte, MALEAL*.—is very common on the Animallays at 3500 to 6000 feet elevation, and on the outskirts of moist woods, along the Western Ghats and central parts of Ceylon, at the same elevations. Its leaves are used for thatch.—*Beddome*.

OYSTER.

Han, CHIN.	Ostrea, LAT.
Osters, Oester, DAN., DUT.	Ternin, MALAY.
Huitre, FR.	Ostras, PORT., SP.
Austern, GER.	Ustritia, RUS.
Sipi, Kaloo, HIND.	Ostra, Ostron, SW.
Ostriche, Ostrica, . . . IT.	Itridiye, TURK.

The oyster is a well-known and diffused mollusc, occurring in many parts of the eastern seas. At Kottiar, near Trincomalee, the edible oysters are of prodigious size. The shell of one of these measured a little more than 11 inches in length by half as many broad, thus unexpectedly attesting the correctness of one of the stories related by the historians of Alexander's expedition, that in India they had found oysters a foot long. Pliny says, 'In Indico mari Alexandri rerum auctores pedalia inveniri prodidere.' Darwin says that amongst the fossils of Patagonia he found 'a massive gigantic oyster, sometimes even a foot in diameter.' The oyster is much relished as an article of food, and in France and Britain has been cultivated.

Oysters are amazingly fruitful, one of them is said to contain 1,200,000 eggs; so that a single oyster might yield enough to fill 12,000 barrels. The eggs are expelled in the form of spawn, a white fluid resembling a drop of grease, in which the microscope reveals innumerable minute oysters. This substance is called 'spat' by the fishermen, and the matter in which they swim doubtless serves to attach them to various submarine bodies, or to individuals of their own species. In this way are formed innumerable banks of oysters, which are kept up by collecting the spawn at sea and in different places along the coasts of England and France, and depositing it in the sheltered and shallow waters selected for 'oyster layings,' which are usually kept untouched till they have arrived at some size, that is in the course of two or three years. The pearl oyster is the *Melesgrina margaritifera*.

P

P, in the English language, is the twelfth consonant and the sixteenth letter, and is pronounced by closely shutting the lips and opening them suddenly with an explosive emission of breath, as in part, pop, prop. When an initial or a final, as in play, imp, it gives an abruptness of sound to the consonant next it. P, b, f, m, and v are all labial letters, and are convertible in various tongues. Ph, in representing the sounds of the Indian alphabets, is to be regarded as a simple aspirate, as in up-hill, and not as an f, though this also occurs in the Mahrati, where p'hul, HIND., a flower, becomes fool, and pathar, a stone, fatar. The Tamil letter p — represents ph, as well as b and bh. The letter p, therefore, is in eastern tongues transmutable into f and b. P and f in Persian names are used interchangeably; the p belongs to the old language, the f to the modern. Thus the ancient Aspadana has become Isfahan, and hence Isfahan. Pars is now Fars. Also, in Turkish, s and p of the Persian become t and b, as in tarband for far-band, literally head-binder, and tarbush for sar-pôsh, or head-cover. The Arabs have neither p nor g before a, o, u, and always substitute for these letters k and b; thus Aigouptios, an Egyptian (a Copt), becomes Kibt.

PA. SANSK. A prince or chief.

PAAK. DUKH., GUJ., HIND. Sharks' fins.

PAAL, a land measure in the Eastern Archipelago, $\frac{1}{4}$ of a statute mile.

PAB. HIND. A ferment for beer, etc.

PABAR, a river of the Bashahir state of the Panjab, said to rise in lake Charamai, near the Barendra pass. The main stream emerging from the Barendra pass, called by the natives 'Büren ghati,' is narrow and rocky, presenting a series of small rapids above Shergoan, which renders the transport of timber impracticable. The declivity of the Pabar between its confluence with the Sipun and Shergoan is 254 feet per mile.—*Gerard.*

PABHI HILLS, a range of hills to the east of Jhelum. It is crossed by the Khori pass, 5 miles to the N.E. of Rasul, and by the Kharia pass, 10 miles to the S.E. of Jhelum. The range stretches for 30 miles from the neighbourhood of Bhimbar to Palsal, and is not more than 500 feet above the river.—*Cunningham, Anc. Geog.* p. 166.

PABNA, a town in Bengal, in lat. 24° N., long. 89° 17' 25" E., on both banks of the Ichhamati. It is the chief station of the Pabna revenue district, in the Rajshahi Koch-Bahar division, with a population in 1872 of 1,211,594. The people are largely of aboriginal descent, but have adopted Muhammadanism, 847,227; Hinduism, 361,914. The other religions having Chandals, 50,126; Sunris, 29,728; Jaliya, 26,948; Rajputs, 664; Kayasthas, 35,359. In 1873, the people, harassed by the landlords, broke out into agrarian rioting.

PACHA, Pasha, or Basha, a title of the Turkish court in the higher grades, equivalent of viceroy. The rulers of Egypt were so designated until the title of Khedive was bestowed.

PACHAD. PEKS., PUSURU. Land irrigated by small streams.

PACHAK. HIND. Cossyphus Aucklandia.

Kust-i-Hindi, . . .	ARAB.	Sepuddy, . . .	MALEAL.
Kust-i-Arabi, . . .	"	Kushtam, . . .	SANSK.
Kust, Kustus, . . .	GR.	Godu malanel, . . .	SINGH.
Kut, Ooplate, . . .	HIND.	Kushta, . . .	SYRIAC.
Costus Arabica, . . .	LAT.	Changala, . . .	TEL.
Pucha, . . .	MALAY.		

Pachak is a fragrant root, so designated in the price-currents of Calcutta and Bombay, whence it is exported to Canton, being highly esteemed by the Chinese as an incense. It is the *Cossyphus Aucklandia*, and a native of Kashmir. Kuth is described in Persian works on *Materia Medica* with Kust as the Arabic, Kushta as the Syriac, and Kustus as the Greek name. Dr. Royle was only able to meet with two kinds in India, one called Kust-Hindi, and the other Kust-Arabi. These evidently refer to two of the three kinds of costus described by Dioscorides as the Arabian, Indian, and Syriac. There can be little doubt, therefore, that the Kuth or Pachak is one of the kinds of costus of the ancients which formed an ingredient in their most famous compound alexipharmic confections, such as the Theriaca and the Mithridatium. It was also highly esteemed by them as an incense. When burned, it yields a fine smell. The Chinese beat it into a fine powder, which they burn as incense in the temples of their gods. Of the Pachak, 6697½ bazar maunds, of the value of Rs. 99,908, were exported from Calcutta in the year 1837-38. Dr. Falconer subsequently found it growing in great abundance all round the elevated summits of Kashmir, and thought it could be produced to an unlimited extent, of the best quality, in the Himalaya at elevations of from 7500 to 9000 feet above the sea, and that the Chur mountain alone might be brought in a few years to produce thousands of maunds of it. He introduced it into the Saharunpur Botanic Garden, and named it *Aucklandia*, in honour of Earl Auckland. It is a gregarious herb, 6 or 7 feet high. Its roots are dug up in September or October, chopped up into pieces from 2 to 6 inches long, and exported without further preparation via the Panjab to Bombay, whence it finds its way to the Red Sea, Persian Gulf, and China, another portion being sent across the Sutlej and Junna to Hindustan. In Kashmir the cost of its collection and transport to a mercantile depot is about 2s. 4d. per cwt.; but at Jugadree on the Junna it has increased to about 16s. 9d. or 23s. 4d. per cwt., and in the Chinese ports it fetches nearly double that price the cwt. The Chinese attach great efficacy to it as an aphrodisiac. The imports into Canton in 1850 were 854 pikuls, valued at 5150 dollars. In Kashmir it is chiefly used for the protection of bales of shawls against insects.—*Royle's Prod. Res.*; *Royle's Ill.*; *O'Sh.*; *Sinmonds.*

PACHAMALAI, or Green Mountains, a mountain range in Trichinopoly and Salem districts, Madras, lying between lat. 11° 10' and 11° 24' N., and between long. 78° 33' 30" and 78° 50' E.

PACHA-PAT. HIND. *Marrubium odoratissimum*, white horehound, a well-known article in Bengal. Its source was long doubtful, although extensively used by the natives of the country. The drug is found in every bazar almost throughout Hindustan. The leaf is largely imported by Moghul merchants; it is used as an ingredient in tobacco for smoking, and for scenting the hair of

women; the essential oil is in common use for imparting the peculiar fragrance of the leaf to clothes among the superior classes of natives; the people of the Peninsula are peculiarly fond of this perfume, as are also the Roman Catholic inhabitants of India generally.—*Cat. Ex.*, 1862; *Wallich*, *Tr. Med. Phy. Soc. of Cal.*, 1835; *O'Sh.* p. 493.

PACHETE HILLS, length 105 miles, breadth 95, lie between lat. 22° 56' and 23° 54' N., long. 85° 46' and 87° 10' E. North part described as marked by hills from 400 to 600 feet. About lat. 23° 35' N., long. 85° 50' E., a mountain, conjectured at from 2500 to 3000 feet. Coal is found near Jerin, lat. 23° 44' N., long. 86° 25' E., and iron ore exists at a short distance. The chain unites the north extremities of the West and East Ghats, and forms the base of the triangle on which rests the table-land of South India. By the Moghuls, the country to the north was called Hindustan, and that to the south the Dekhan.

PACHISI. HIND. An Indian game, played with cowry shells on a board or cloth, usually by four persons, each of whom is supplied with four wooden or ivory cones, which are called 'got,' and are of different colours for distinction. Victory consists in getting these four pieces safely through all the squares of each rectangle into the vacant place in the centre,—the difficulty being that the adversaries take up in the same way as pieces are taken at backgammon. Moving is regulated by throwing cowries, whose apertures falling uppermost or not, affect the amount of the throw by certain fixed rules.—*Tr. Hind.*

PACHMARHI, a plateau in the Hoshangabad district of the Central Provinces, round which the Chauradeo Jata Pahar and Dhuggarh hills stand sentinel; it is about 3500 feet high, and 2500 feet above the plain in which Sohagpur lies; and its average temperature is probably from seven to ten degrees lower than that of the valley. There are some interesting ancient temples at Pachmarhi. The jungles lying all about the base of the range bear the same name, and are very dense to the east and west of it, with a great profusion of fine timber. The temperature is nearly 10° F. lower than in the valley, and, though not free from fever, affords an agreeable sanatorium. Pachmarhi chiefship comprises 24 villages, in the heart of the Mahadeo hills. The chief is a Kurku by caste, and the principal of the Bhopa or hereditary guardians of the temple on the Mahadeo hills, in which capacity he receives yearly £75 in lieu of pilgrim tax, less a quit-rent on his estate of £2, 10s.—*Imp. Gaz.*

PACHODY, a waist-cloth of coloured silk and gold and silver weaving.

PACHWAL, an intoxicating liquor forming an item to revenue. It is made either from maize or rice or sorghum. The grain is boiled and spread out on a mat to cool. It is then mixed with a ferment of vegetables called bakar, and kept in a large earthen vessel for some days; warm water may at any time be mixed with it, and in a few hours it ferments, and is ready for use.

PACHYMA COCOS. *Fries.*
Tweln-a-pho-ta-roup, BURM. | Fuh-ling, . . . CHIN.

This fungus of N. America and E. Asia is the hard Tuckahoe truffle, used in China as a diet article and as a medicine. It occurs in the form of large tubers, varying in size up to a peck measure; has a corrugated, blackish-brown skin,

and consisting internally of a hard starchy substance of a white colour, but sometimes tinged with pale red or brown, especially towards the outside. They are found connected with living fir plantations, or on the sites of old ones, and they are exported to India and elsewhere as China root. Fu-shin is another kind mentioned in books. It occurs in many parts of China, in Japan and in Shan-tung, also in S. Carolina, where it is called Indian bread. In China it is ground up, mixed with rice flour, and made into small square cakes, which are hawked about in the early morning. They are regarded as beneficial in dyspeptic complaints. P. Hoelen, *Fries.*, of Soucheong, and in China, is a large truffle of very agreeable flavour.—*Smith; Chinese Mat. Med.; Von Mueller.*

PACHYRHIZUS ANGULATUS. *Rich.*
Dolichos bulbosus, Linn. | *Carcara bulbosa*, Rumph.
Shakr-aloo, . . . HIND. | *Ingomaas* . . . of MANILLA.

A trailing plant, native of S. America, cultivated in India for its edible tuberous root. It is like a turnip in consistence and taste. No other part of the plant is used for food, but this and *Sida tiliaefolia* furnish coarse sorts of grass cloth fibre. Rumphius says its root, properly prepared, has been considered in Amboyna as a great delicacy.—*Ainslie*, p. 249.

PACHYRHYNCHI, beautiful beetles of the Philippines, veritable living jewels, gold and green. See Beetles.

PACIFIC OCEAN extends between Asia and America, and is upwards of 10,000 miles in breadth, studded with islands. When Magellan entered this ocean, through the strait that bears his name, he sailed three months and twenty days in a uniform direction to the north-west without discovering land, enjoying such uninterrupted fine weather, with fair winds, that he gave it the name of Pacific. On one side of the equator it is called the North Pacific Ocean, and on the other the South Pacific Ocean.

The eastern part of the Pacific has the Easter and Gomez Islands, and moving farther west are the Low or Paumotu Archipelago, Society Archipelago, Mendana or Marquesas group, Cook or Harvey and Austral Islands, Gilbert Archipelago, numerous islands between the Low and Gilbert Archipelagos, Sandwich Archipelago, and several islands to its south, Samoa or Navigator group, Friendly Archipelago, Fiji group, Ellice group, Marshall group, New Hebrides, Santa Cruz group, New Caledonia, Australia, Louisiade, Salomon Archipelago, New Ireland, New Britain, New Guinea, Admiralty group, Caroline Archipelago, Pelew Islands, Mariana Archipelago or Ladrões, Bonin or Arzobispo group, Java, Macassar, Borneo, Sumatra, and many other islands of the Eastern Archipelago acknowledging the supremacy of the Netherlands.

The islands of the East Pacific extend from New Guinea and the Philippines to within 2500 miles of the western coast of America, and from about the 22° of north to the 47° of south latitude,—thus over 200 degrees of longitude and 70 of latitude, or over a fifth part of the earth's surface. On the west are the innumerable islands of the Indian Archipelago, extending from Sumatra to New Guinea, and the great group of the Philippines. They are inhabited by distinct races of men, as the Malayan, the brown

Polynesian, the insular Negro of several varieties, and the African of Madagascar. Of these, the state of civilisation is so various that some are abject savages, while others have made a respectable progress in the useful arts, and have even attained some knowledge of letters.

The brown race of the Pacific occupy all the islands from the Sandwich group in the northern hemisphere to New Zealand in the southern, and from the Tonga group in the west to Easter Island in the east. The black race occupy the islands extending from the Fiji to New Guinea, both inclusive. Certain physical features distinguish each race. Those with brown complexions have generally lank hair and scanty beards, and speak essentially the same tongue, although divided into many dialects; while the black race, numbering several varieties of men, and speaking several distinct languages, have frizzly but not woolly hair, and abundant beards. French naturalists call the islands which the black race occupy Melanesia, or the islands of black men; while Polynesia is applied to the islands peopled by the brown race. Intermixture has occurred between the black and brown races at their points of junction; 300 miles across the trade wind, from the Fiji Islands to the Tonga Islands, being a voyage of no difficulty to a maritime people. The Polynesians, or brown-skinned race, have been again subdivided into Micronesians and Polynesians proper. The former occupy the Pelew, Caroline, Marianne, and Tarawa Islands, and the latter the Sandwich, Navigator's, Marquesas, Tonga, Society Islands, the Dangerous Archipelago, Easter Island, and New Zealand. The Micronesians are distinguished from the Polynesians proper by their low stature, their language, Mongolian conformation, and absence of the system of Tapu or Tabu. Ethnologists have entertained the opinion that the Polynesians proper are sprung from the Malay family of the human race; and Mr. Hale, the best authority on the migrations of the Polynesians, is of opinion that the Samoa or Navigator's Islands were first occupied, and that from them all the other Polynesian islands were peopled. For ages Malay fleets have habitually resorted to the northern coasts of Australia to fish. Although ignorant of the compass, the Polynesians had names for the cardinal points, and steer by the stars, and it was this grand principle of selecting a course which brought the Malay fleet to Navigator's Islands.

From the remains of some Hindu and Jewish customs among the New Zealand branch of the Polynesian race, and the entire absence of anything like Muhammadan customs, it is inferred that the Malay migration from the Indian Archipelago to Polynesia took place after the Hindu influence began to prevail there, and before the arrival of the Muhammadan traders and settlers from Arabia. Indian colonies were established in Java in the first century after Christ. But, according to Javanese annals, the first arrival of the Hindus in the Indian Archipelago from Western India occurred about A.D. 800, and the Muhammadan tradition to the Archipelago began in A.D. 1278. The date of the last migration is probably correct; that of the Hindus, being more distant, is uncertain. From these two great events, it is inferred that the Malay ancestors of the Polynesians left the

Indian Archipelago soon after the commencement of the Christian era.

No trace of a written character has been found in the wide extent of the islands of the Pacific. Most of them are probably too small to have furnished a population, at once sufficiently numerous and concentrated, to generate the amount of civilisation requisite for the purpose.

The history of the nations along the southern borders of Asia has in every era exercised some influence on the Archipelago, and the importance of the international influences of the Archipelago itself may be supposed from the circumstance, that while some writers have derived Malayan civilisation from an original source in Menangkabau, others have referred it to Java, and others to Celebes; whilst two of the ablest, Mr. Marsden and Mr. Crawford, have endeavoured to exhume a great nation whose civilisation preceded the Javanese, the Malayan, and the Bugis, and impressed itself more or less, not only on the Archipelago, but over all Polynesia. And the learned now recognise that a great continent, with peculiar forms of animal life, once lay in the sea between Madagascar and the Archipelago.

In the Pacific Ocean, a westerly current fills the whole breadth of the tropical zone, from the coast of America to that of Australia and the Indian Archipelago. The cold Peruvian stream flows with great rapidity along the shores of Chili and Peru, and takes a westerly direction on reaching the neighbourhood of the line. It has everywhere a remarkably low temperature comparative to the latitude. After the current has assumed a westerly direction, its mean temperature does not exceed 20.5° R., but as it advances towards the west its temperature gradually rises to 27° or 28° R. On the western banks of the Pacific, the equatorial stream divides into several branches. Part of its waters flow to the south, a greater quantity penetrates through the channels of the South Asiatic Archipelago into the Indian Ocean, the remainder turns to the north-east, on the confines of the Chinese Sea, leaves the eastern coast of the Japanese islands, and then spreads its warm waters under the influence of north-westerly winds over the northern part of the Pacific. Then the Japanese stream plays here the same part as the Gulf Stream in the Atlantic, and exerts a similar, though less mighty, influence over the climate of the west coast of America, as it is neither so large nor so warm, and having to traverse a wider ocean, in higher latitudes, naturally loses more of its heat during the passage.—*Crawford's Malay Dic.*; *Logan in J. Ind. Arch.*, 1848-1858; *Hartwig*; *Captain Elphinstone Erskine's Western Pacific*, p. 448; *Marsden*; *Wilkes' Narrative*; *D'Urville's Voyages*; *Captain Blackwood's Survey*.

PACKHAN BED. HIND. of Kangra. A root obtained from Tibet, believed to be an antidote for opium, and used as such in cases of poisoning by that drug, either in powder, in doses of 15 grains, or in infusion.—*Cat. Ex.*

PAD or **Paud**, as Vasarapad, Nundepad, Mundlapad, written in Tamil Padagai, is a cluster of cottages, situated, for the convenience of farmers, at some distance from the village to which they belong. It is the same word seemingly as the Bengali Para, a village, or part of a village or town, and used in Bengal as a suffix, as in Gokulpara.

PADÆI, an ancient pastoral people, tributary to Darius, supposed to have been somewhere in India, and on the banks of the Ganges, and who, according to Herodotus (*Thalia* iii. c. 99), eat their aged relatives. See *Batta*.

PADAL, Pathadi, Pardhan, or Desai, is a Gond tribe who are the bards or religious counsellors of the upper classes of Gonds. From these has sprung a half-caste tribe who speak Mahrati, and occupy themselves in spinning thread and playing on wind instruments.

PADAM is the term by which the races designate themselves, whom the Assamese name Bor and Bor-Abor. The Bor occupy the mountains to the north of the Brahmaputra river, in about lat. 27° 12' N., and long. 94° to 97° E., on the west or right bank of the Dihong river, on the southern face of the Himalayas, on the borders of Tibet and China. They dwell to the south of the Bor-Abor, and their chief town is Membu. Higher up are the Bor-Abor, whose capital is Semong, of about 300 houses; they are polyandrous, it being not uncommon for an Abor woman to have two husbands, brothers, living under one roof. They do not eat beef, but hunt, and eat the flesh of the wild buffalo. They are more powerful than the Bor. Their bachelors live in the Morang, a large building in the centre of the village for the reception of strangers, and in this custom they resemble some of the Archipelago races. They sacrifice to deities of the woods and hills. Numbers of these people are also found on the shores of the two great northern branches of the Brahmaputra river. When first known, they made periodical descents on the plains. Bor means tribute; hence Abor, free from tribute; and the Padam are so arranged into the payers and non-payers of tribute. They carry bows and arrows, some of which are poisoned. Their dress is made of the bark of the Udhal tree. Bor is also said to mean 'great,' and we find the term of Bor Khamti employed. The Bor-Abor race dwell on the north of the Abor, occupying the mountains on the north of the Brahmaputra river, in lat. 28° N., and long. 95° E., to the west of the Dihong river.—*Indian Annals; Latham's Ethnology; Aitchison*. See Abor; India.

PADANG. MALAY. A plant, probably the *Pandanus odoratissimus*, used in the Archipelago for making mats.

PADANG ISLANDS, seven in number, lie on the west coast of Sumatra. Padang is the chief settlement of the Dutch on the west coast of Sumatra.

PAD BAHERA. HIND. A mushroom of the Panjab, said to produce insensibility.—*Powell*.

PAD-DAN. BURM. In Amherst, a timber used for making drums and musical instruments. It is a kind of red sanders-wood.—*Cut. Ex.*

PADDANATTU PILLAIYAR, a rich Chetty merchant, who lived at Kaveripatnam about the 17th century. He acquired great wealth by trading with Ceylon. One day, in his absence, a Saiva mendicant asked alms from his wife, but was refused. The beggar left a little slip, to be given to her husband, containing these words, 'Mind that even a needle with a broken eye will not follow thee in thy last day.' Paddanattu Pillaiyar then became an ascetic, and wandered about, visiting Saiva temples, and composing verses in their honour.

PADDY. ANGLO-MALAY. *Oryza sativa*.

Bhatt, . . . GUJ., HIND. | Nelli, TAM.
Padi, MALAY. | Vadlu, TEL.

Unhusked rice, whether growing or cut, before thrashing, or before the grain is separated. The Malays, like the other people of S.E. Asia, have many varieties of rice, as Adan-padi, Jinjang-padi, Jongko-padi, Kappa-padi, Radin-padi, Sambas-padi, Sampangan-padi.

PADDY BIRDS, an egret; so named from Padi, MALAY, rice, because they often fish in rice fields. See Birds; Cranes; Egret.

PADEEN, a race of Ichthyophagists dwelling near the Indus, whom Herodotus describes as hunters, and eating raw flesh; it is most probable he had heard of the class termed Pardi, the hunters and fowlers to this day of India.—*Tod's Tr.* p. 147.

PADEWAHKAN. The trade of the Bugis with New Guinea and the Eastern Islands, and the trepang fishery on the north coast of Australia, are carried on chiefly in vessels called Padewahkan. These leave Macassar and the other parts of Celebes, for the Eastern Islands, during the westerly monsoon, returning with the S.E. trade wind.

PADI. KARN., TAM.; also Pari. In Madras, a measure of capacity = $\frac{1}{16}$ th of a marcal, containing 93·752 cubic inches, or about 3 lbs. 6 oz. of water. It is the same as the nali. It is also a measure of weight equal to 100 palam or 125 oz. avoirdupois. As a measure of capacity, 8 olluk make 1 padi.

PADIKASU, a native of Kalandai, who was one of the court poets of Kegnatha Setupati of Ramnad, A.D. 1686–1723. His principal work, *Tondamandala Satakam*, contains 100 stanzas in praise of the Tonda country.

PADIVIL KOLOM, a round tank of Ceylon of great dimensions.

PADKA, the engraving of the soles of two feet on the top of a tombstone, to mark the tomb or samdi of a Gossain. It is also called Charnpad and Paghan. Paduka, footprints of a Jaina priest.

PADMA. SANSK. The lotus, *Nelumbium speciosum*. Padma devi, also Padmavati, consort of Vishnu, a title of the goddess Lakshmi. Padmanabba-swami, a name of Narayana in the Malealan country. Padmasana, a lotus seat. Padma-wan, the sacred lily lake of the Hindus.

PADMANABHAM, a village in the Vizagapatam district, Madras presidency, situated in lat. 17° 58' N., long. 83° 19' E., near the fort of Bimlipatam. Population (1871), 558. It is a place of religious and historic interest, containing a large endowed Hindu temple of much local celebrity, and marking the scene of a decisive battle fought between Viziam Raj of Vizianagaram and Colonel Prendergast's force, on the 10th of June 1794. Viziam Raj was defeated, and fell with most of the principal chiefs of the country.—*Imp. Gaz.*

PADMANI, daughter of Hamir Sank, the Chauhan raja of Chitor in the 13th century. She was very beautiful; and was married to Bhim-si, uncle of the young prince Lakum-si of Chitor, and protector of the kingdom during his minority. In 1275, Bhim-si was lured into the camp of Ala-ud-Din, who had conducted a long unsuccessful siege, and there made prisoner, but was promised release if he would deliver up Padmani. Padmani, after consultation, feigned compliance, and was sent out with seven hundred covered litters, each of which contained an armed warrior. At the last interview allowed to the husband and wife, Bhim-si escaped

under the cover of the warriors, who had to fight their way, and mostly fell, and Ala-ud-Din retired. Ala-ud-Din returned in A.D. 1303, and the Mewar people, despairing of success, resolved on the rite of Johar. In this all their wives, to the number of several thousands, were led to subterranean fires, Padmani closing the train. Her name is hallowed in Rajput song,—her beauty, accomplishments, and destruction.

PADMA PURANA, a religious book of the Hindus. It contains 55,000 slokas or stanzas. It is in five khanda or books, viz. the Sreshti-khanda, which treats of creation; Bhumi-khanda, on the earth; Swarga-khanda, on heaven; Patala-khanda, on the regions below the earth; and the Uttara or last khanda. The tone is strictly Vaishnava, and in the last-named section Siva and Parvati join in worshipping Vishnu.—*Dowson*.

PADOMAN. MALAY. A compass; the word is also written Paduman, Pandoman, Panduman.

PADOUK. BURM. *Pterocarpus dalbergioides*, also *P. indicus*. Several experiments have been made in the ordinance department of Madras to ascertain its fitness for gun carriages. From its large size, its even grain, rendering it susceptible of a high polish, and beauty of colour and pattern, it appears to be well suited to the manufacture of articles of furniture.

PADRI, a Portuguese titular name given to the religious teachers of all faiths, to the Protestant and Romish clergymen, and in Sumatra to the Muhammadan teachers of Acheen. These last are chiefly Malays of the Menangkabao states, of the interior of Sumatra, who for many years opposed the advance of the Dutch, but are now chiefly congregated in Acheen. The Padrai of the Bombay side of India is a levied tax or fee for the maharaj and guru, presented at their visits.

PADSHAH. HIND. A king, equivalent to the Arabic sultan; Padshahi, royal; Padshah-zada, a prince; also written Pacha, Pasha, Basha.

PADSHAH SALEP, a commercial term for a drug lately imported from Bombay into England. Its source is unknown, and supposed by Dr. Birdwood to be the root of *Asparagus adscendens*.

PADUA GURUWA, a small community of untraced origin in the mountains of Udakind, in Western Uvah, in Ceylon, who profess Muhammadanism, but conform to Kandyan customs.

PACHILONEURON PAUCHIFLORUM. *Bedd.* Pudangalli, TAM. A tree abundant on banks of rivers on the South Tinnevely and Travancore mountains, up to nearly 4000 feet. It yields a valuable hard reddish timber, which is used for building and other purposes, and for walking-sticks.—*Beddome, Fl. Sylv.* p. 93.

PADERIA FETIDA. *Linn.* *Psychotria volubilis*, *Roxb.* | *Apocynum fetidum*, *Bur.* Gandho-bhadhuli, . BENG. | Savirela chettu, . TEL. Gandhali, . . . HIND.

Grows in Bengal and peninsular India. It has a very offensive fetid smell, and the roots are used as an emetic.—*Roxb.* i. p. 683.

PÆONIA plants were formerly in great repute as a medicine; and Dioscorides gives 16 names by which the drug was known.

Pæonia corallina, Ud-salap, HIND., is one of the *Pæonia* of Dioscorides. Its root occurs as irregular, flattened, woody masses, with a brownish epidermis, and fibrous, with numerous fissures radiating from the centre. It is used by native

physicians for weakness, palpitation, and asthma, and to fasten round the neck of children to prevent asthma. Root believed to be antispasmodic and to stimulate the secretion of milk and menses. It is said to become more efficacious the longer it is kept.

Pæonia moutan, Mau-tan, CHIN., a native of China, is a shrub, of which several varieties, with beautiful whitish flowers stained with pink, are now in British gardens. The *Pæonia papaveracea* has a broad crimson stain at the base of each petal. It sprouts so early in the spring, that if exposed to the sun, it is very liable to be cut off by the late frosts of England. A very dwarf kind (apparently a distinct species) has finely-cut leaves, and flowers of a dark velvety purple, like the Tuscan rose. This the Chinese call the black moutan, and it is supposed to be the same which Lindley named *Pæonia atro-sanguinea*. Another kind, called tse, or purple, has double flowers of a large size; this is probably the variety reported to have 1000 petals, and which is said to exist only in the garden of the emperor. The third, called lan, or blue, is a lilac variety, with flowers of the colour of *Wistaria Sinensis*. There are others of various shades of purple, perfectly distinct from those, and equally fine. The double whites are also numerous and handsome. The largest of these Dr. Lindley has named *P. globosa*, but there are four or five others nearly as large and double. Some of them have a slight lilac tinge, which gives a richness to the colour. The most expensive is one called wang, or yellow, by the Chinese; it is a straw-coloured variety, rather pretty, but not so handsome as some of the others.

Pæonia rubra.
Chih-choh-yoh, . . CHIN. | Chuen-choh, . . . CHIN.
Tiau-chih, . . .

Its root is used in Chinese medicine as a carminative.—*Smith; Fortune's Wanderings*, p. 321; *Riddell; Eng. Cyc.; Powell*.

PAG. GUJ., HIND., MAHR. A foot, a foot-mark. It is variously used and combined to mean intelligence, search. *Paggi*, a searcher.

PAGADAPU GHETTU. TEL.
Melanthesa rhamnoides, B. | *P. reticulatus*, *Poir.*
Phyllanthus vitis idæa, R. | *Erapurugudu*, . . TEL.

The same name is also given to some others with red berries, as *P. turbinatus*, etc., and likewise to *Sethia Indica*, the Telugu name of which Roxburgh assigns to *M. turbinata*.

PAGAH. HIND., MAHR. State soldiers, household troops; any body of horse under a commander.

PAGAN, a ruined Burmese town, in lat. 21° 10' N., long. 94° 34' E. Captain Yule found the details of its architecture of Hindu origin; and it is known that Anoratha Saumen, when he established Buddhism in Pagan, built all its pagodas and temples after the exact models of those then existing in Thatung or Satung, of the same size, and in the same order. Such is the testimony of Talaing tradition, and he believes of Talaing history. The name of this town is also written Paghan, and it was a royal city about A.D. 700. The remains of 800 to 1000 Buddhist temples are to be seen, the most remarkable being the Ananda, Tha-pin-ya or Thai-pin-yu, Gauda-Palen, and Dhamayangyee.

Gauda-Palen signifies the throne of Gaudama. Height, 180 feet. It is cruciform in plan, and is

very conspicuous in approaching Pagan from the southward. It has numerous pinnacles and a tall central spire; it is seen glistening with its white stucco-like plaster far down the Irawadi river, rising like a dim vision of Milan cathedral. It is compact in structure, and elevated in proportion to its bulk. It has a massive basement, with porches, and rising above in a pyramidal gradation of terraces, crowned by a spire Tee. From the top of the terrace, just below the spire, is a fine prospect of the vast field of ruined temples, stretching north-east and south-west.

The Ananda temple is supposed to have been built about the time of the Norman conquest. Ananda means the Infinite. The plan of the building is a square of nearly 200 feet, having on each side a projecting vestibule, which converts it into a perfect Greek cross. These vestibules are lower in perpendicular height than the body of the temple, which rises to 35 feet in two pairs of windows. Above this rise six successive terraces, diminishing as they ascend, connected by carved converging roofs, the last terrace just affording space enough for the spire which crowns the edifice. The gilded Tee caps the whole at a height of 168 feet above the ground. The outer corridor is roofed with a continuous flying buttress abutting on to the massive outer walls.

Thai-pin-yu, or Omniscient, is the second great temple of Pagan, and is stated to have been built about A.D. 1100. It forms a massy square edifice of 200 feet on each side, rising to a height of 210 feet from the ground. The characteristic of the Thai-pin-yu is the elongation of the building, before any considerable diminution of spread takes place, and also the position of the principal shrine, which stands high above the ground. There is first a spacious two-storeyed basement, similar to that of the Ananda, then two receding terraces, but here the usual gradation is interrupted. The third terrace, instead of rising by terraces, like the others, projects at one leap aloft to a height of some 60 feet in a truly massive and stupendous cubical donjon, elongated again at the top by a renewal of the pyramidal gradation of terraces, and the usual culminating spire. Colonel Fyche (p. 31) suggests that there was an Upper Pagan, near Pagoung, and a Lower Pagan, in lat. 21° 12' N., on the banks of the Irawadi.—*Fergusson*, p. 618; *Yule*; *Fyche*, p. 30.

PAGGI. HIND., from Pag, a foot. A village servant in Gujerat and the N.W. of India, who traces thieves by their footprints. Mr. Elphinstone (p. 192) relates that one was employed to pursue a man who had carried off the plate belonging to a regimental mess at Kaira. He tracked him to Ahmadabad, 12 or 14 miles, lost him among the well-trodden streets of that city, but recovered his traces on reaching the opposite gate, and, though long foiled by the fugitive's running up the water of a rivulet, he at last came up with him, and recovered the property, after a chase of from 20 to 30 miles. The skill of many of the paggi in Gujerat is remarkable. They measure with a string every trace of the impression of the foot, and make observations with a sense which practice renders very acute. The moment the object of their pursuit is traced to a village, the string and all the remarks are delivered to its paggi, who pursues the chase till he finds the thief or murderer, or till he lodges him in another village.

In the Jhalawar district, the property stolen or the thief must be produced, and the paggi who trace the pag or footprints are there the most famous. In Sind, also, the paggi was skilled. A chaprassi, who had gone off with a considerable sum of money, was traced by his pag from Kotree to Bahulpur, where he was arrested, brought back, and punished for the theft. Burckhardt relates some curious facts concerning the sagacity of the Arabs in tracing of footsteps or ath'r, a talent which they seem to possess in common with the free Indians of America, with this difference, that in the American woods the impression is made upon grass, in Arabia upon sand.—*Rob. Tr.* ii. p. 176; *Elphin.* p. 192; *Malcolm, Cent. India.*

PAGLIAN. HIND. The sculptured soles of feet on the tombstones of Saddhu Hindus.

PAGODA.

Tse-dee, Po-ya, . . .	BURM.	Dewal,	URDU,
Bhoo-ra, Po-rah, . . .		But-kadah,	
Koil,	TAM.	But-khana, Murat, . .	

This is a term by which Europeans designate the religious temples of the Hindus and Buddhists of India, Further India, China, and Japan. The pagodas of Hindus and Buddhists, and the mosques and tombs of Muhammadans, are of importance in the architectural history of these countries, being numerous, and almost the sole structures which have survived through the revolutions of dynasties and religions. The name has been variously derived,—from Muhammadah authority, as But-kada, from But, an idol, and Kada, a temple. It may have been applied in the S. of India from Dhatugarbha or Deh and Gopa, a Buddhist shrine, a relic receptacle. It may also be from Pe or Pei, TAM., a devil, and Gudi, TEL., a temple. Some of the Hindu and Buddhist temples are magnificent. The most costly pagoda in British India is that built by Bimul Sah on a spur of the Aravalli mountains. The site cost sixty lakhs to level, and it took fourteen years in building, at a cost of eighteen krors of rupees, perhaps in all twenty millions sterling. The more celebrated of those of peninsular India are at Achaveram, Chellumbrum, Conjeveram, Jaganath, Seringham, Tripati, Trivadi, Verdachellum, and Warior. Trinomally is 222 feet high. The whole exterior of many of the largest of the Burmese pagodas (Buddhist) is gilt. In the capital, some of the most beautiful and elaborate khyoungs or priests' houses are covered with the richest and most ornate gilding from top to bottom; and in some cases the cost of gilding alone, for a single building, has exceeded £10,000 sterling. On the occasion of festivals, also, it is a prevailing custom among the Burmans to attach to their pagodas leaves of gold, even when the building generally is not gilt, which is the origin of the little patches of gilding seen on the temples near every village of any size or wealth.

The prominent parts of the Hindu temples are the Gopura or Torana, the gateway; and the Kalasa, with the Mora and Kangni.

The architectural form of the pagodas of different parts of India have distinctive forms.

The Dravidian temples at Mahavellipur, Tanjore, Madura, are in storeys with cells; those of Bengal present no trace of utilitarianism, no pillars or pilasters, no reminiscence of habitations, but have a polygonal base, and all the lines of the pyramid or sikra are curvilinear.

The chief Dravidian temples are at Chellumbrum, Combaconum, Conjeveram, Ramisseram, Madura, Seringham, Tanjore, Tinnevely, Tiruvallur, Vellore, Peroor, Vijayanagar, Avadea, Kovil, Veeringepuram, Taramangalam, Mahabalipuram, Ramisser, and others.

The ruined temple at Chellumbrum is supposed to have been dedicated to Subramanya. As it now exists it was built at intervals from A.D. 927 to the year 1685; it has a hall 340 feet by 180 feet, with 1000 columns, each of a single granite stone, and all ornamented. A temple to Parvati is near the hall.

Tiruvallur, 30 miles W. of Madras, has a double shrine of Dravidian form dedicated to Siva and his consort, standing in a cloistered court, which measures 192 feet by 150 feet over all, and has one gopura in front. This has afterwards been enclosed in a court measuring 470 feet each way, with two gopuras, and containing numberless little shrines and porches; and subsequently the whole was enclosed in a court 940 feet by 701 feet, with five gopuras and several important shrines, amongst them a hall with 688 columns.

Seringham temple, near Trichinopoly, is a small village shrine, but with six enclosures, the innermost enclosing a hall 450 feet by 130 feet, with 1000 (960?) columns, each of a single block of granite, and all elaborately carved. Each enclosure was intended to have four gopuras. The outer wall that encloses all measures 2475 feet by 2880 feet. It has four great outer gopuras. The northern one leading to the river and to Trichinopoly measures 130 feet in width by 100 feet in depth, and is one of the most imposing masses in S. India, and is severe and in good taste throughout. There are in all 14 or 15 great gate towers. This great Vaishnava temple at Seringham owes all its magnificence to buildings erected during the Naik dynasty, A.D. 1532-1742.

Near the Vaishnava temple of Sri Rangam is one dedicated to Jumbukeswara, a title of Siva. In architectural beauty it far surpasses the Vaishnava structure.

The pagoda at Tricullore in S. Arcot is handsome, and many natives of S. India retire to this town to spend the evening of their days.

Conjeveram is said to have been at first founded by Adondai, the illegitimate son of Kolotunga Chola, in the 11th or 12th century, and to have succeeded Combaconum as the capital of Cholamandalam. Great and Little Conjeveram are contiguous towns. There is a Saiva and a Vaishnava pagoda. The great temple at Great Conjeveram has some large gopuras, also a hall of 1000 columns, several large and fine mantapas. It is said to have been at one time a Jaina pagoda.

Vellore has a temple inside the fort, which has been converted into an arsenal. It has one of the most elegant as well as one of the oldest porches or mantapas in the south, with many Yali and mounted warriors. The porch is supposed to be of date A.D. 1350. The lingam there indicates its dedication to Siva.

Tarputry has two temples, one now in use dedicated to Vishnu, the other, deserted, on the banks of the neighbouring river. It has two gopuras, one of them unfinished, the whole of the perpendicular part covered with the most elaborate figure sculpture, cut with exquisite sharpness and precision in a fine, close-grained hornblende rock in a rich

and tasteful style,—two handsome temples elaborately decorated with sculptures representing Hindu mythological events. Among the bas-reliefs is a figure holding a Grecian bow, rarely seen in Hindu sculptures.

Combaconum has a temple dedicated to Sri Rama, and there is a small but fine gopura in the town 84 feet across and 130 feet in height.

Madura has many temples, most of which were erected during the long and prosperous reign of the tenth Naik king, Trimul Naik, A.D. 1621-1657. The most important was a choultry, which he erected at a cost of a million sterling, between 1623 and 1645, to receive the presiding deity when taken in procession. Its hall is 333 feet long by 105 feet wide. The façade of its hall is sculptured with the monster-like Yali and mounted warriors. In front of the choultry is a gopura left uncompleted by the same king. The sanctuary of the great temple is said to have been built by Viswanath, the first Naik king, A.D. 1520, but it owes all its magnificence to Muttu Virappa, the eldest brother of Trimul Naik, and to Trimul Naik, 1622-1657. It has a hall of 1000 (985) columns, whose marvellously elaborated sculptures surpass those of any other known temple hall. There is a small shrine dedicated to Minakshi, the tutelary goddess. The Perumal pagoda at Madura was erected in the 18th century.

The great pagoda at Tanjore was converted by the French armies in 1777 into an arsenal, and has not been re-appropriated to sacred purposes. The temple stands in a courtyard 500 feet square, the distance between the gateway and the temple being broken by the shrine of the bull Nandi. The perpendicular part of its base measures 82 feet square, and is two storeys in height, of simple outline. Above this the pyramid rises in 13 storeys to the summit, which is crowned by a dome, and reaching a height of 190 feet. All the sculptures on the gopuras belong to the religion of Vishnu, while everything in the courtyard is dedicated to the worship of Siva. It is supposed to have been erected by Kadu Vettiya Soran or Cholan, a king reigning at Conjeveram in the beginning of the 14th century. Besides the great temple and the Nandi porch, there are several other smaller shrines in the enclosure, one of which, dedicated to Subramanya, a son of Siva, though small, is as exquisite a piece of decorative architecture as is to be found in the south of India. The bull and this temple are of the 15th or 16th centuries.

At Tinnevely is a double temple; the great square, being 508 feet by 378 feet, is divided into two equal portions, of which one is dedicated to the god Siva, and the other to his consort Parvati, with three gateways to each. Its great hall has 1000 columns, a forest of pillars.

Ramisseram temple, on the island of Ramisser at Paumben, is enclosed in an outer wall 868 feet long by 672 feet, and 20 feet in height, with four gopuras built entirely of stone, three of them being unfinished. Its corridors extend to 4000 feet in length, are 20 to 30 feet broad, and about 30 feet high. Each pillar or pier is compound, with rich elaborate designs. The central corridor is 700 feet long. It is supposed to have been begun about the year 1550. A small vimana in the west is alone of older date. It is now devoted to Siva.

Vijayanagar is built on the Tumbudra river. A city is said to have been founded there in A.D. 1118 by Vijaya Rayal, but only as a dependency of the Mysore Raj. The Muhamnadans in A.D. 1310 had struck down the kingdom of Hoisala Bellala, and destroyed their capital Hullabid; in 1322, Warangal was finally destroyed by them, and Bakka and Harihara, princes of Warangal, re-established themselves at Vijayanagar. For two hundred years it maintained a gallant struggle against the Bahmani and Adal Shabi kings of Ahmadnaggur and Bijapur. The period of its greatest prosperity was between the accession of Krishna Deva, A.D. 1508, and the death of Achutya Rayal, 1542; and it is to their reigns that the finest monuments of the city must be ascribed. In 1565 it was finally taken by the Muhamnadans, and it has ever since continued in ruins. There is no other city in India where ruins exist in such numbers. The most remarkable of the remains is an unfinished temple dedicated to Vitoba, a local manifestation of Vishnu. It was commenced by Achutya Rayal, A.D. 1529-1542. The principal part is its porch of granite, carved with a boldness and expression of power nowhere surpassed by buildings of its class.

Mahavellipore, south of Madras, on the sea-shore, is famed for its monolithic temples or raths. There are inscriptions in Sanskrit, and their date seems to have been not later than the 7th century. They have been formed out of the solid rock, and on one of the oldest the Hindu deities are sculptured, the gods being represented with four arms. One of them, the Arjuna rath, is nearly finished, and was intended to contain a cell. There are also some excavated caves; and at Saluvan Kuppam, two miles north of Mahavellipore, is a cave with ten tiger heads at its entrance.

Ellora Kailas cave has a model of a complete temple of the Dravidian style, standing in a courtyard, and consisting of a vimana between 80 and 90 feet in height, preceded by a large square porch supported by 16 columns; before this stands a detached porch, reached by a bridge, and in front of all stands the gateway, which is in like manner connected with the last porch by a bridge, the whole being cut out of the solid rock, standing in a court dug around the temple in the sloping side of the hill, about 100 feet deep at its inmost side, and half that height at the entrance or gopura, the floor of the pit being 150 feet wide and 270 feet in length; and in the centre of this rectangular court stands the temple. There are also two pillars or dipdan (lamp pillars) left standing on each side of the detached porch, and two elephants about the size of life. All round the court there is a peristyle cloister, with cells and some halls. The completeness of this cave never fails to strike the beholder with astonishment.

In the Ganjam district, the Hindu temples are formed by a group of rather low buildings, in some cases detached, in others joined, each with a graduated pyramidal roof, terminating in an ornamental conical cupola.

In Northern India, from Orissa to the foot of the Himalaya, the Hindu temples, with scarcely a single exception, are rectangular in plan and cubical in the form of their body. In Southern India, also, the square temple is the rule.

The Dharmasala temples of the Sikhs are, in general, plain buildings. They are built by rich

men, or by several uniting to defray the expense. They have a flat roof, and are sufficiently capacious to accommodate a multitude of attendants, who sit or stand during worship. Images are banished. The bunga or temples at Amritsar, surrounding the holy tank, are fine buildings; each misl or association of Sikhs has a separate bunga.

Pagodas of Burma are chiefly relic receptacles, viz. dat-dau, relics of a Buddha or Rahanda; parrebau-ga, implements or garments of Buddha or other sacred person; dhamma, books or texts; and the ou-deit-tsa contain statues of Buddha. The Buddhists of Burma, at Prome and Rangoon, have erected magnificent temples for their worship, with much detail, but with a grandeur of dimensions that prevents the thought of puerility. The great colossal figures of the pagodas at Rangoon and Prome are magnificent structures. That at Rangoon, built on the most elevated part of a great laterite ridge, towers majestically above all surrounding objects.

The finest architectural remains in Burma are to be seen in the deserted city of Pagan, but many of the most magnificent have been greatly shattered by earthquakes. The bow and the pointed arch, as well as the flat and the circular, have been in use long before their employment in India. Modern buildings are chiefly of wood. Palaces and monasteries, carved with extraordinary richness of detail, and often gilt all over, present an aspect of barbaric splendour. The dhagobas, relic chambers, which form at once the objects and the localities of Buddhist worship, are almost the only brick structures now erected, and these are often gilt all over; £40,000 are said to have been expended on a single temple. The ordinary buildings are chiefly built of bamboo and thatched with grass, and well raised from the ground on piles. In carving, the Burmese artisans give full scope to the working of a luxuriant and whimsical fancy.

Chinese joss-houses are simple structures, but ornamental from their pleasingly contrasted colouring.

In the common form of a Hindu temple, the adytum containing the object of worship is invariably covered with a 'sika', or bell-shaped spire; the mandap, or ante-chamber, is open, and contains in temples of Siva a figure of the attendant bull Nandi. Vaishnava temples, especially, have frequently two ante-chambers, in which case the first is open and the second closed. These, as also the temples of the Jain religion, have occasionally three spires, the centre one rather higher than the other two. The temple is surrounded by a Dharmasala, or house of accommodation for attendants and worshippers. The surrounding structure is, however, still sometimes, especially in Jain temples, formed of numerous small spire-covered shrines, and the lodging-houses are in that case detached, but the whole mass of buildings is frequently encircled by a fortified wall. A large temple presents, in fact, the appearance of a village; the auxiliary buildings look like substantial private houses, but are more liberally adorned with carved woodwork; and sometimes nearly the whole exterior of them is covered with rude paintings, representing marriage or other domestic festivals, or more frequently the achievements of the gods. Small reservoirs of water called kound, circular wells, and more

imposing wavy or bowlike, and sometimes majestic tanks, are the more or less indispensable accompaniments of places dedicated to the religion of the Hindus. Like the Christian churches of the middle ages, the Hindu temples of Gujerat are usually placed in situations highly favoured by nature. The awful gloom of the grove, the romantic beauty of the mountain glen, the brightness of the river's bank, the wildness of the cloud-enveloped peak, or the solemn calm of the ocean bay, are accessories of which the religions of Siva and of Adinath fully avail. The officiating priests are, in the temples of Siva, usually Gosai; in those of Vishnu, Brahmans or Viragi; in temples of Devi, low caste Brahmans or Gosai. The priest in a Jain temple may be of any caste, with the curious provision that he be not a Srawak, or layman of that religion. Low caste Brahmans, especially the class called Bhojak, are frequently employed. The Gosai are members of a monastic order which follows Siva. They wear orange-tawny clothes, and the tilak, or sectarian mark upon their foreheads, is horizontal. The Viragi is a Vaishnava monk, and wears a white dress and a perpendicular tilak. Those who are servants of the Deo add to the tilak a chandlo or red spot, made with a preparation of turmeric. The Jain monk is commonly called a Jati, but the general name applying to all these orders is that of Sanyasi, or ascetic. The Sanyasi are often persons who have lost their property, or have been deprived of their children, or suffered some other calamity, against which they have not had resolution to bear up. The intended recluse having arranged with a guru, or monkish dignitary, for his reception into the order, and having ascertained the favourable day by astrological calculation, breaks the sacred cord, if he be of the regenerate classes, removes the hair of his head, assumes the monastic dress, and with alms and prayers receives initiation. The Sanyasi are, however, sometimes consecrated at an early age; a person who despairs of having children not unfrequently vows to consecrate one son, if two be granted to his prayers; and among the Jains, when disciples are scarce, as they frequently are, the monks purchase children for the purpose of initiating them. The markings which Hindu sects place on their foreheads are alluded to by Moses, Leviticus xix. 28: 'Ye shall not make any cuttings in your flesh for the dead, nor print any marks upon you: I am the Lord.' Bishop Patrick notes that this imprinting of marks or signatures was understood to be fixing a badge or characteristic of the person's being devoted to some false deity.—*Fergusson*, pp. 334-374; *Mason*; *Moor*; *Yule*; *Forbes' Rasamala*, ii. p. 311; *History of the Panjab*, i. p. 123. See Java; Mat'h.

PAGODA.

Hun, HIND. | Varaha, Varagan, SANSK. Pagoda, a gold coin that was current in Madras until towards the middle of the 19th century. The derivation of its name, pagoda, though it is of modern origin, is very obscure. Prinsep derived the term from the pyramidal temple depicted on one side of the coin, and this would appear to be the general opinion. Bartolomeo, who lived in Southern India from 1776 to 1789, called the coin Bhagavadi, and states that it was improperly called by the Europeans pagode or pagoda. Bhagavadi or Bhagavati is one of the names of Durga or Parvati, whose image used to be shown on the

coin, and as Bartolomeo was a good linguist, his etymology of the term is probably correct. The East India Company's pagodas, with the figure of a temple on one side, were comparatively modern, and it seems more probable that this device was adopted on account of the prevailing European name for the coin, than that the name arose from the device. The following are the names of the different classes into which the coins described have been divided:—(1) Buddhist coins, (2) Chalukya coins, (3) Nonambavadi coins, (4) coins of the Gajapati dynasty, or elephant lords, (5) the Lingayat pagoda, (6) Vijayanagar or Bijanagar pagodas, (7) the Gandikota pagoda, (8) the Chittuldroog pagoda, (9) the Travancore pagoda, (10) East India Company's pagodas, (11) Adoni pagodas, (12) Mysore pagodas. Latterly, the varieties of these coins became very numerous, so that their discrimination at the present day is a matter of some difficulty. The immediate prototype of the pagoda is a globular punch-struck coin believed to be of Buddhist origin. It was known to some of the people of S. India as the Varaha or Varagan, from the practice of the ancient Chalukya dynasty of stamping their coins with the figure of the boar incarnation or avatar of Vishnu, varaha mudra meaning boar stamped. The same figure appears as the signet of the rajas of that country in some old copper grants of lands in the Mackenzie collection. A pon seems to have been half a pagoda. In Tanjore the revenue accounts were kept in pon, panam, and kasu, but the modern value of a pon was R. 1.9. The Tamil name for gold is ponna. With the Canarese-speaking race the term honnu meant gold; two honna were equal to one varaha; and the term honna (hun) was adopted by the Muhammadan conquerors for the coin which the British call a pagoda. The Hindu name probably varied according to the image of the coin; thus we find the Rama tanka having the device of Rama and his attendants, and the matasya hun of Vijayanagar with four fish on the obverse. Other pagodas have Vishnu, Jaganath, Venkateswar, etc., on them. Those with three swami or figures are of the best gold, and were valued ten per cent. higher than the common pagoda. The canteroy pagoda is named from Kanthirava or Lion, the title of an ancient raja who ruled Canara. The Nayu pagoda probably means a coinage by Timma Nayu, a ruler in the Peninsula.

The hun was subdivided into fanams and kas. Fanam, or more properly panam, is identical with the word pan, known in Bengal as one of the divisions of the Hindu metrical system, now applied chiefly to a certain measure of cowries and copper money. The old fanam was of gold only, and was the one-sixteenth of a hun. In the Lilavati we find 16 pana = 1 dharan; 16 dharan = 1 nishk, where the dharan (or dharam) seems to accord with the hun, which is identical in weight with the Greek drachma. The Ikkeri pagoda contains 16 fanams, that of Varnrai and Anandru 14, and the Kalyan pagoda 28. The division adopted by the British was 42. A pagoda, as a Madras gold coin, was equal to three rupees and a half, and it was about 50 to 52.8 grains weight; 80 pagodas weight is a (outcha) seer of 24 rupees weight. This corresponded with the average weight of the old native rupee of 175 grains; but after the introduction of the 'Com-

pany's rupee' of 180 grains, the pagoda weight was 64 grains generally.—*Brown's Wars.*

PAGODA THRUSH. *Acridotheres pagodarum*, is probably the bird referred to in *Lalla Rookh*,—

'Mecca's blue sacred pigeon, and the thrush
Of Hindustan, whose holy warblings gush
At evening from the tall pagoda's top.'

PAGRI. HIND. A head-dress, a turban closely folded. This is the only article of dress which indicates the caste and race of the wearer. The Konkani Brahman has on his head a disc of artfully folded red calico, three or four feet in diameter; the Bhatia has the tip of his turban curled up above his forehead, like a rhinoceros' horn; the Sikh has a closely-fitting and neatly-folded turban; the fisherman's turban is usually made out of a piece of old fishing net; and a Mahratta's head-dress looks like a bundle of tightly-twisted snakes.

PAGRUS, a genus of fishes belonging to the family Sparidae, with four or six strong concave teeth in front, supported by similar conical teeth behind them, with two rows of rounded molar teeth on each side of both jaws.

PAGUMA LANGER. *Gray.* The *Martes laniger*, *Holts.*, the Terni tree-cat, is an animal of Tibet and the Snowy Himalaya; it is one of the *Viverrinae*.

Paguma trivirgata, Gray.

Viverra trivirgata, Rein. | *Paradoxurus trivirgatus, ward, Mus. Leyd.* | *Gray.*

This animal is very common in Burma, and occasionally enters houses in the towns in pursuit of rats. When young it is easily domesticated, and valuable as a rat-catcher.—*Mason.*

PAGURIDÆ, the Pagurians or hermit crabs, a tribe of the Crustacea, composed of a considerable number of species, the greater part of which are remarkable for the more or less complete softness of the abdomen, the want of symmetry in the appendages of this part of the body, the shortness of the two posterior pairs of feet, and many other characters. Modern writers recognise several genera of this family. The *Pagurus* of Aristotle was not a hermit crab, but he describes three kinds of hermit crabs under the name *Kapnissos*. They are termed *Kapnissos* by Oppian, Ælian, and Galen. A great resemblance exists among all the hermit crabs, *Paguri*, properly so called, not only in the details of their organization, but in their habits. The cephalo-thoracic portion of their body is shorter than the abdominal portion. They have stout claws and have a shield in front, but have a long, soft, and utterly defenceless tail. They occupy empty nautes and neritina shells.

Pagurus cristatus, Edw., New Zealand.
P. deformis, Edw., Mauritius, Seychelles.
P. punctulatus, Edw., Indian Ocean.
P. affinis, Edw., Ceylon.
P. sanguinolentus, Q. and G.
P. setifer, Edw., New Holland.
P. olivaceus, Edw., Asiatic Seas.
P. orasimanus, Edw., South Seas.
P. tibicen, Edw., South Seas.
P. elegans, Q. and G., New Ireland.
P. aniculus, Edw., Mauritius.
P. gonagrus, Edw., China.
P. pilosus, Edw., New Zealand.
P. frontalis, Q. and G., New Holland.
P. gamsianus, Edw., Cape of Good Hope.
P. miles, Edw., coasts of India.
P. custos, Edw., coasts of India.
P. diaphanus, Edw., Oceanica.
P. hungarus, Fabr., India, Naples.

Cenobita of Latreille is a genus of the *Paguridæ*, and, in the opinion of M. Milne-Edwards, establishes the passage between the *Paguri*, properly so called, and *Birgus*. *Cenobita rugosa*, in length about three inches, is found in the Indian Ocean. There are three other species.—*Eng. Cyc.; Milne-Edwards.*

PAHAL, or Chaupan Pal, of Kashmir, are shepherds who tend the flocks of other people; there are, besides, several wandering tribes who seem distinct from the settled population.

PAHAL, amongst the Sikhs, the initiatory rite for admitting a candidate into the Sikh religion. The novice must have attained the age of discrimination, and he stands with his hands joined in the form of supplication, and repeats after the priest the articles of his faith. Some sugar and water are stirred in a basin with a double-edged dagger, and the water is sprinkled on his face and person. He drinks the remainder, and exclaims, 'Wah! Guru.' At least five persons have to be present, one of them a priest. Women were sometimes thus initiated. Since the middle of the 19th century, the Sikh sect has rapidly diminished.

PAHANG, on the east coast of the Malay Peninsula, in lat. 8° 31½' N., the capital of a kingdom, was formerly a place of great trade; the river is small. The southern part of Pahang is inhabited by the same tribe of Binua who are found in Johore. See *Jakun*.

PAHAR. HIND., MAHR. A division of time, a watch of the day or period of three hours. There are eight in the 24 hours; hence *Pahara*, a guard, a body of men on guard; *Pahari-wala* or *Pahari-kura*, a sentinel.

PAHARI. HIND. A mountaineer; a tribe on the N.W. frontier of India. They are not numerous, and are Hindus.

PAHARIA, of the Santal pargana, number about 41,000. They are arranged into two tribes, those who live in the Rajmahal hills, and the Naiga Paharia on the plains to the west. The former live by grain crops reared on the slopes of the hills, and by bartering in the plains the hill bamboos, and the grass and timber which grow in luxuriant profusion in every direction. The Paharia are addicted to drink. The Bhagulpur hill rangers were principally composed of this people. But since Mr. Cleveland's settlement at the close of the 18th century many of them receive pensions. The Naiga Paharia have no right of forest or well-wooded hills. Both the Paharia tribes are low in the social scale. Their language is called Male or Rajmahali, and its basis is Dravidian. The Male or Rajmahali are low in stature, but stout and well proportioned. There are many less than 4 feet 10 inches, and perhaps more under 5 feet 3 inches than above that standard; but 5 feet 3 inches is about the average height of the men. Buchanan Hamilton says that the features and complexion resemble those of all the rude tribes whom he had seen on the hills from the Ganges to Malabar. Their noses are seldom arched, and are rather thick at the points, owing to their nostrils being circular. Their lips are full, but not at all like those of the Negro; on the contrary, their mouths in general are very well formed. Their eyes, instead of being hid in fat, and placed obliquely like those of the Chinese, are exactly like those of the Europeans. Their

women, though hard worked, are far from having harsh features. The Male head, like that of the Kol, has more of an elongated oval than that of a lozenge shape. The forehead is not narrow, and the lateral projection of the zygomata is comparatively small. The Male or hill man is described by Captain Sherwell as much shorter than the Santal, and of a much slighter make. He is nearly beardless, is not of such a cheerful disposition, nor is he so industrious.—*Cal. Review*, Dec. 1860; *Mr. Logan in Jt. In. Arch.*

PAHLAV or Pahlava is a term supposed by Olsbhausen to have arisen out of the name of the Parthava or Parthians. They were not the Persians, who are called Parasika, but the Arsacidan Parthians. The term Pahlav, as applied to a people, early fell into disuse in Persia, and came into use in India in the second to the fourth centuries A.D.

Pahlavi is a later Iranian dialect which followed on Zand and the Old Persian of the inscriptions, and led to Parsi or Pazand and the Persian of Firdusi. The origin of the word has also been said to be Balkavi or pertaining to Balkh, and softened into Pahlavi. The term Pahlavi, however, now applied to the official language of the Sassanian dynasty, Dr. Haug traces to Pahlav-Parthia, and holds that from the memory of Parthian rule in Persia, everything connected with antiquity was called Pahlavi, i.e. ancient. The term Huzvareh, as applied to Pahlavi, he explains as a mode of writing and pronouncing a foreign word, generally Semitic being written, and its Persian equivalent pronounced in its stead. Dr. Haug deciphered the Hajjabad, Naksh-i-Rajab, and other Pahlavi inscriptions, and showed that, in the Pahlavi languages, the Semitic element far outweighs the Iranian. The Iranian verbal terminations, found in the Pahlavi MSS., are entirely wanting in the earlier Hajjabad inscription. The Pahlavi of the MSS. is, as written, a Semitic language with an admixture of Iranian words and a prevailing Iranian construction, and is, as read, a purely Iranian tongue. From using the Huzvareh mode, the Persians came by degrees to write their words as they pronounced them, and thus the Semitic words of the Pahlavi had disappeared from modern Persia as early as the time of Firdusi. In discussing the origin and age of Pahlavi, it cannot be supposed that the Sassanian kings, very zealous promoters of Persian ascendancy and restorers of the Zoroastrian religion, would adopt for their official language a Semitic dialect not then existing in Persia. Dr. Haug therefore looks to an earlier period of Persian history, and shows reason for concluding that Pahlavi is identical with that form of the Assyrian language which was spoken at Nineveh, whence it spread, with the Assyrian rule, over all the subject provinces, and among others over Iran. An old Pahlavi-Pazend glossary was edited by Dastur Hoshengji Jamsaji Asa, revised and enlarged, with an introductory essay on Pahlavi, by Dr. Martin Haug, Ph.D. It comprises the text of the Sassanian Farhang, and a Pahlavi-English glossary arranged as an alphabetical index according to the Roman character, and an important essay on the Pahlavi language by Dr. Haug. The essay comprises a history of the researches made in Europe into the Pahlavi language and literature. Mr. Growse describes

it as a dialect of Assyria, and the language of the Persian court.—*Times of India*; *Growse*; *Weber*, p. 188.

PAHWAR, the tract of country and districts between the Jhelum and Indus rivers.

PAI. HIND. A small copper coin in Indian currency, the third part of a pice and twelfth part of an anna.

PAI or Pey, also Paisachi, a demon, a disembodied spirit, a goblin. The worship is confined to the extreme south of India, and chiefly among the Shanar race of Tinnevely; but, under the teaching of Bishop Caldwell and other eminent missionaries, from the middle of the 19th century they largely adopted Christianity. The Bant race of Canara believe that persons who die a violent death become Paisachi.

PAIDI PATTI or Pamidi Patti. TEL. *Gossypium acuminatum*. Paidi means gold, hence excellent, this species being much prized by Brahmans for making the sacred thread and for the wicks of temple lamps. It is generally found in back yards and gardens, and is known by its concretate seeds.

PAIGHAMBAR. HIND. Any prophet of the Hebrew Scriptures, also applied to Mahomed. The word is Persian, and is from Paigham, a message, and Bar, a bearer. It is equivalent to the original Hebrew and Greek words meaning messenger, which have been translated angel. The Muhammadans believe in angels. The original word is often applied to men, 2 Samuel ii. 5, Luke vii. 24, and ix. 52. Our knowledge of such beings is derived wholly from revelation, and that rather incidentally. The expression, Matthew xviii. 10, seems to denote the relation which the children of God sustain to him. The term in Arabic is Rasul; Rasul Allah, prophet of God, Mahomed.—*Lane's Koran*.

PAIGHAMBRI GAHOON. HIND. In Gugaira, a huskless or pearl barley; black or purple barley is called the same, literally prophet's wheat, a fine wheat without husk.

PAIJAMA. HIND. Trousers, literally leg dress.

PAIK, Hindu village militia, called Paik, Shet-sanadi, and Halab in different parts of the country. Also an infantry soldier, an armed watchman or peon, a village watchman, a messenger.—*W. E.*

PAIKASHT. HIND. Cultivators, persons who, having no land of their own, cultivate other people's land on terms agreed on.

PAILA, among the Ho race a test for witches.

PAILI, a measure of capacity, $\frac{1}{2}$ of a kurawa.

PAI-LOO. CHIN. Usually called a triumphal arch; ornamented buildings common in every part of China, some of stone, and others of wood. Most of them have been erected at the public expense. The Toran of the Sanskrit, a triumphal gateway.

PAIN. HIND. Lower. Pain Ghat, land below the ghats, low lands. Pain Ganga, an affluent of the Godavery river. The town of Chanda is built on its bank.

PAINA, bracelets worn by native women of India.

PAINSADI, also Painsi. HIND. Broad cotton cloth, 500 threads in the web.

PAINTED PARTRIDGE, *Francolinus pictus*, is the Kala-titar of India and the Kakkera-kodi of the Teling people. It occupies the central

parts of India. It delights in grassy plains and fields. The cock bird's call, chee kee kerray, chee kee kerray, is heard in the early morning.

Painted snipe, *Rhynchaea Bengalensis*, is the *R. picta* of Gray, and *R. orientalis* of Horsfield. It is a permanent resident in many parts of India, breeding in June and July, in thick marshy ground. It is found also in Africa, Ceylon, Burma, Malaya, and S. China.

PAINTINGS, pictures, or representations are forbidden in the second of the ten commandments, which Jews and Christians recognise. All the doctors of El-Islam differ on this head, some absolutely forbidding any delineation of what has life, under pain of being cast into hell; others permitting pictures of the bodies, though not of the faces, of men. The Arabs are the strictest of Misiconists, yet even they allow plans and pictures of the holy shrines. Other nations are comparatively lax. The Alhambra abounds in paintings and frescoes. The Persians never object to depict in books and on walls the battles of Rustam, and the Turks preserve, in the Seraglio treasury of Constantinople, portraits by Greek and other artists of their Sultans in regular succession.

Painting as an art has attained to various degrees of excellence amongst the many nations of Eastern and Southern Asia. Hindus have often beautifully illuminated manuscripts, but the other ornaments are better executed than the figures. Muhammadan artists excel them in this art. Painting on wood, a decorative art, is practised in Kashmir, the Panjab, and Hyderabad in Sind, the ornamental designs being in the form of foliage and shawl work; in Sind, all shades of agreeable hues of red, green, and yellow. Sind is famous also for another form of wood painting, in articles from the turning lathe, in which all these shades are used, broken by casting on other colours. It is waved or curled like the grain of marble, by the handiness of the workman, and taken up. Articles of painted pottery were exhibited from India in 1861. At the International Exhibition of 1871, beautiful painted tiles were shown from Hyderabad, Sind; beautiful patterns on painted wood from Kashmir. The beautiful painted tiles of Hyderabad, Sind, prove that skill little inferior to that which covered the most lovely archways and other buildings of imperial Dehli, still remains at the command of the architect to-day, in districts famous of old for this class of miscellaneous painting. The enamels, vitrified colours on a metal base from Jeypore, were as lovely as anything Cellone or Caradosso ever did. The Panjab enamel is usually blue and green.

The people of Kashmir execute beautiful patterns on their papier-mache work.

The Shiabs do not entertain the same objection to pictures that Sunni Muhammadans have; and portraits and other representations of the human figure are common among them. The art of calligraphy is carried by the Persians to the highest perfection, and they are allowed to be the best penmen in the east. Their beautiful character affords the greatest scope for a fine writer to display his skill. The calligrapher of the Muhammadan races also displays great skill in arabesque ornamentation of his pages, and the Guldestah-i-Sookh published in Madras affords many beautiful illustrations, with ornamentation in every variety

of arabesques. In white-washing their walls, over the chunam or lime plaster, the workmen of Seringapatam first give a thin coat of suday, or fine clay, which is mixed with size, and put on with a hair brush. They next give a coat of whitening made of powdered balapum or pot-stone, and then finish with a coat composed of eight parts of abracum or mica, one part of powdered balapum, and one of size. The abracum is prepared from white mica by repeated grindings, the finer particles being removed for use by washing them from the grosser parts. The wall when finished in this manner shines like the scales of a fish; and when the room is lighted, it has a splendid appearance.

Painting of portraits is an art which in India and China has attained to a degree of excellence. Sir Rutherford Alcock's work on the artistic works of Japan has shown the high state of excellence to which the people of that nation have attained. At the International Exhibition of 1871, the paintings on talc from Patna, Benares, and Tanjore, the Delhi paintings in ivory, and other specimens, were prominently noticed. — *Burton's Mecca*; *Elph.* p. 158.

PAIR - AMMA - VARU, amongst the non-Aryan races of the S. of India, the goddess of small-pox. The words mean lady mother of the eruption.

PAISACHI. SANSK. Demoniac, a demon, a goblin, a disembodied spirit. A form of marriage amongst the Hindus in ancient times; the forcible seizure of a wife. A written character in the S. of India, invented by the Palli race. The Paisachi Prakrit, a vernacular tongue of ancient India, was a dialect differing not much from Magadhi. — *Hind. Theat.* ii. p. 215; *As. Res.* iii. p. 315, vii. p. 199.

PAITA or Poita. BENG. From the Sanskrit Pavitra, the thread or string of cotton worn by the Brahman, Kahatriya, Vaisya, and the artisan castes of Hindus; it marks them as initiated into the tribe or guild, or, as applied to the Brahmins, twice born.

PAITAN, a town on the Godavery, supposed to be near Plithana of the Periplus. It is mentioned as sending onyx stones to Barygaza, the modern Baroch, 230 miles distant. Col. Tod says (*Travels*, p. 297), Paitan, on the Godavery, is the Tagara of the Periplus, which supplied the sindones for the Roman market, and he supposes Tagara to be from Tak-nagara, the city of the Tak or Takshak. It is variously written, Paithana, Pattana, Puttan, and Pythan; and Tagara and Plithana seem to have been towns of importance near it, and known to the Greeks. — *Elphin.* p. 224; *Tod's Travels*, p. 297. See Salivahana.

PAITHINASI, a Hindu philosopher who resided at Hardwar. He taught that God is visible and eternal. He is mentioned in the Skanda Purana. — *Ward*, iv. p. 44.

PAKA. HIND. Written Pukkha. Ripe, mature, exact, complete, perfect, satisfactory. Used of buildings; means made of stone or brick and mortar, as opposed to mud. Paka plaster, plaster made of lime.

PA-KA-THAN. BURM. A timber tree in Amherst, Tavoy, and Mergui, of maximum girth 2 cubits and maximum length 12 feet. When seasoned it floats in water. It is used by Burmese to make paddles, oars, etc.; is a tough, durable, good wood. — *Captain Dance*.

PAK-CHAN, a boundary river in Tenasserim, which falls into the Bay of Bengal at Victoria Point, after a course of 78 miles. The territory of Ma-li-won, on the right bank, belongs to the British. On the left are the Siamese provinces of Kra and Re-noung, which are considered valuable for their lead and tin mines.—*Imp. Gaz.*

PAKENATTI, a homeless migratory race, found in Mysore and the Telugu country, who about the beginning of the 18th century were driven from their houses by oppression. The head of the village authorities in the Telugu district of Bellary is of this agricultural tribe.

PAKFONG, the white copper of the Chinese, an alloy of 40·4 parts of copper, 31·6 of nickel, 25·4 of zinc, and 2·6 of iron.—*Simmonds' Dict.*

PAKHAI. HIND. A leather bag for carrying water in. In British India, a pakhal is slung on each side of a bullock; the driver is called a pakhali.

PAKHALL, a lake, distant about 140 miles from the Nizam's capital in a north-easterly direction. This reservoir, which is picturesquely situated in the heart of a pretty dense forest, has a magnificent spread of water, taking in a circumference of about 50 miles, its shelving margin being girded by a chain of low wooded hills and undulations. One in particular deserving special notice, situated on the south-east side, of considerable height and clothed with arborous verdure, constitutes a striking foreground to the picture, well worthy the pencil of the artist. The advantages here presented by nature, in steep natural ridges, have at some remote period in the past been made subservient to the formation of a huge embankment, by which means the capacity of the lake was considerably enhanced, and the existence of old weirs and sluices unmistakably indicate the former flourishing condition of the land in the vicinity. The place is often visited by wild elephants. Thick beds of coal occur in the valley of a nullah not very far from Pakhall in the Warangal district. Trial borings were made in Ballarpur, and beds of more than fifty feet thickness were found. At Wurroa, a coal-pit was commenced. The coal is of poor quality, breaks very rapidly on exposure, and is therefore very wasteful. The coal from a place known as Saster is said to be very durable.

PAKHITO, or Pushtu, the spoken language of the Afghan people.

PAKINA DINA VARU. KARN. A tribe of fortune-tellers.

PAKKIWAR, a predatory tribe in the Panjab, whom the authorities in 1863 tried to reform. They profess Muhammadanism.

PAKLI, a plain in the Hazara district occupied by the Swati, Awan, Syuds, and Tanaoli.

PAK-PATTAN, or Ajudhan, an ancient city in Montgomery district, Panjab, on the high bank of the old Sutlej, 28 miles from the present course of the river. Its foundation is assigned to a Hindu saint or raja of the same name, of whom nothing else is recorded. This part of the doab is still known as Surat-des, a name which recalls the Sura-kousae of Diodorus, and the Sudrakae and Oxudrakae of other Greek writers. For many centuries Ajudhan was the principal ferry of the Sutlej, where the two great western roads from Dehra Ghazi Khan and Dehra Ismail Khan met, the first via Mankera, Shorkot, and Harapa, the

second via Multan; and at this point the conquerors Mahmud and Timur, and the traveller Ibn Batuta, crossed the Sutlej. The fort is said to have been captured by Sabaktagin in A.H. 367 or A.D. 977-78, during his plundering expedition in the Panjab; and again by Ibrahim Ghaznavi, in A.H. 472 or A.D. 1079-80. On the invasion of Timur, the mass of the population fled to Bhatner, and the few people that remained were spared out of respect for the famous saint Farid-ud-Din, Shahr-ganj, whose shrine is in Ajudhan. From this saint the place derives its modern name of Pak-Pattan, or the 'Ferry of the Pure One,' that is of Farid, whose latter days were spent at Ajudhan. By continued fasting, his body is said to have become so pure, that whatever he put into his mouth to allay the cravings of hunger, even earth and stones, was immediately turned into gems and sugar, whence his name of Shahr-ganj, or 'sugar-store.' This miraculous power is recorded in a well-known Persian couplet:—

'Sang dar dast o gohar gardid,
Zahr dar gain o Shahr gardid.

'A stone in the hand became a gem,
Poison in the mouth became sugar.'

From a memorial couplet we learn that he died in A.H. 664 or A.D. 1265-66, when he was 95 lunar years of age. But as the old name of Ajudhan is the only one noted by Ibn Batuta in A.D. 1334, and by Timur's historian in A.D. 1397, it seems probable that the present name of Pak-Pattan is of comparatively recent date. The saint Farid-ud-Din was instrumental in the conversion of the whole Southern Panjab to the faith of Islam. Pilgrims from all parts of India, and even from Afghanistan and Central Asia, visit his shrine, and during the Maharram as many as 60,000 persons have been estimated as present. On the afternoon and night of the last day, a well adjoining the shrine is pierced by a narrow opening, known as 'the Gate of Paradise,' and whoever can force his way through this aperture during the prescribed hours is assured of a free entrance into heaven. The crush is naturally excessive, and often results in severe injuries to the pilgrims.—*Cunningham's An. Ind.* pp. 214-219; *Yule, Cathay*, ii. p. 406; *Imp. Gaz.*

PAKSHA. SANSK. A fortnight; the half of a lunar month. That from the new moon to the full is called the Sukla-paksha or light fortnight, the other is the Krishna-paksha or dark fortnight of the waning moon.

PAKSHU DHARA MISHRA, author of the *Prasanna Raghava*.—*Ward*, iv. p. 376.

PAKUNG-BA, in Manipur, the personal deity or ishta-deva of the raja. It is a snake, from which the Manipur family claim descent. When it appears it is coaxed on to a cushion by the priestess in attendance, who then performs certain ceremonies to please it.

PAKWAZ. HIND. An oval-shaped drum used for keeping time to the singing of the dancing girls.

PAKYOTH, the wild gourd of Scripture, *Citrullus colocynthis*, *Schrd.*, grows in many parts of India, on the sandy lands of the Peninsula, Dekhan, Gujerat, Cutch, Dehli. Dr. Burn states colocynth of two kinds occur in Gujerat, the Cucunius colocynthis and C. pseudo-colocynthis. The colocynth of commerce is the dried fruit, peeled and unpeeled, and is brought from the Levant,

north of Africa, and south of Spain. Colocynth is useful for protecting shawls and feathers against insects.

PAL. HIND. A tent; a division of a Jat clan. Pal is also the term for a community of any of the aboriginal mountain races; a section of any Hindu tribe. The Mewati have twelve pal. The Jat have many pal.

PAL, a local term for long defiles, the residence of the mountaineers; their chiefs are called Indra Pati; in Bhaka, Put. Its import is a defile or valley, fitted for cultivation and defence.—*Rajasth.* l. p. 381, ii. p. 350.

PAL, also Pala. **TAM., TEL.** Milk.

PAL. HIND. As a measure of time, a moment, or minute, of which there are 60 in a ghari.

PALA, a dynasty of, it is said, eighteen kings, who ruled in parts of the ancient Gaur dominions in Western and Northern Bengal, and in Behar from A.D. 745 to 1200.

PALA-BHOGAM. TAM. A form of land tenure.

PALA-KAPYA, an ancient Hindu physician who wrote on medicine. He was supposed to be an incarnation of Dhanwantari.—*Dowson.*

PALALU, of the Northern Circars, agricultural labourers who were regarded as slaves to the ryots, and were hereditarily attached to and transferable with the land. The Agari of Cuttack are said to be domestic slaves.

PALAM. TAM. A measure of weight at Madras equal to 1 ounce 3/75 drachms avoirdupois.

PALAMOOTTA, a town and small military cantonment in the Tinnevely district, in lat. 8° 42' N., long. 77° 46' 40" E.; population, 17,885 in 1871. A mile east of the Tamrapurni river. Its fort is dismantled.

PALAMOU, an alimentary substance used by the Turks and Arabs. It consists of acorns which have been dried, toasted (to destroy the bitterness), and reduced to powder, with sugar and aromatics added.—*Simmonds' Dict.*

PALAMOW, a subdivision of the Lohardagga district in Bengal; area, 4260 square miles; population, 366,519. Coal is worked in the district, which is very mountainous.

PALANG POSH, PERS.; in commerce, Palampore. The former term is composed of two Persian words, literally bed-cover. These are manufactured in the district of Cuddalore, at Ponnary, also at Sydapett in the outskirts of Madras, but especially in the town of Masulipatam, the last always of a superior kind, and in various sizes, 5½ to 6 cubits in breadth, and 7 to 8 long, and are sold from 6 to 15 rupees, according to size. The Cuddalore, Ponnary, and Sydapett fabrics are of ordinary quality, and are sold at from 2 to 7 rupees each.

PALANKEEN or Palanquin, a litter or covered carriage borne on men's shoulders. It has almost wholly ceased to be used in India. Palanquins form one of the articles which eastern rulers present to their subjects, or give them permission to use. Written also Palki.

PALANPUR, a native state in the province of Gujerat, Bombay, between lat. 28° 57' and 24° 41' N., and long. 71° 51' and 72° 45' E. It is one of eleven states in communication with the Palanpur political agent, viz. Palanpur, Radhanpur, Therad, Wao, Warai, Terwara, Suigaon, Deodar, Santalpur, Kankrej, and Bhabar. Palanpur, Radhanpur, Warai, and Terwara are Muhammadan, the others

are Hindu, five of their ruling families being Rajput. The Palanpur family is of Afghan origin, belonging to the Lohani tribe, and is said to have occupied Behar in the reign of Humayun. In 1597, Ghazi Khan, the chief, obtained from Akbar the title of diwan, for having successfully repulsed an invasion of the Afghan tribes. Its revenue, £40,000, and tribute of £5000 to the Gaekwar of Baroda. "He maintains a force of 294 horse and 697 foot.—*Imp. Gaz.*

PALAR, a river of the Carnatic, which rises on the Mysore table-land, lat. 13° 27' N., long. 78° 2' E., runs S.E. 55 miles, E. 87 miles, S.E. 48 miles, into the Bay of Bengal. Length, about 280 miles, running past Vellore, Arcot, and Chingleput. It receives the Pony, 40 miles; Sheyaru, 90 miles. The entrance of the Palar, 9 miles S. of Sadras, is contracted by a bar or narrow ridge of sand, inside of which the river becomes of considerable width. The town of Conjevaram is built on the Palar. The Palar aicut, in the N. Arcot district, was constructed about the year 1855. Across the river near Vellore it is 2600 feet long, and is the head of a system which irrigates about 37,672 acres.

PALAS. SANSK. Butea frondosa. When a Hindu dies at a distance, it is customary to burn vicariously an article of clothing along with a bundle of leaves of the Butea frondosa. This vicarious rite is called Palasavidhi. It was from the abundance of the palas tree on the battle-field that the name of Plassey was given to the battle fought by Clive in 1757. Palas gum, or Palas gond, or Dhak ka gond, is the produce of Butea frondosa, in ruby red, transparent grains of irregular tears. Under the name of kini or cheena, it furnished one of the kino gums imported into Europe.—*Wilson.*

PALA UTAN. MALAY. In Penang, a wood of light brown colour, from a large tree; used for planks.—*Colonel Frith.*

PALAVA, a tribe of the Kshatriya race who had neglected to reverence Brahmans. Manu, speaking of them, styles them Dasya, whether they speak the language of the M'lecha or that of the Arya, and the people to whom he there alludes seem to have been Medes occupying the valley of the Indus.

PALAVARAM, in lat. 12° 57' 30" N., long. 80° 18' E. A town and military cantonment, 11 miles S.W. of Madras, situated close to the western side of a small range of hills, and 4 or 5 miles distant from the sea-coast. The Adyar river runs sluggishly about 300 yards to the north.

PALAVESHUM, a Maravar of a servile family, who made himself celebrated for his robberies and outrages, from Madura round to Quilon, during the latter part of the Muhammadan government of Seringapatam. Since his death he has been worshipped as one of the demons of the Shanars of Tinnevely, and was most feared of all their devils. Thousands of persons are called after his name, to deprecate his enmity. Many children of the Tamil Pariah races are similarly named after other demons.

PALAWAH. BURM. A beautiful red but heavy wood of British Burma. A cubic foot weighs 52 lbs. Length of the trunk to the first branch is 45 feet, and average girth measured at 6 feet from the ground, is 6 feet. It sells at 12 annas per cubic foot.—*Cal. Cat. Ex., 1862.*

PALAWAN, the S.W. island of the Philippine group, is a narrow strip of land extending nearly S.W. and N.E. 250 miles, forming the eastern boundary of the China Sea, from 8° 13' to 11° 17' N. The N. extremity is a narrow peninsula about 60 miles in length, consisting of a mass of limestone rock rising precipitously from the sea, from 200 to 800 feet in height, which the native inhabitants climb readily in search of the edible birds' nests, their chief occupation. It is along the eastern coast of this island that ships proceed when bound up the China Sea late in the seasons, when the north-east monsoon is expected, and derives from this the name of the Palawan passage. —*Journ. Ind. Arch.*

PALAYAKAR. MALEAL. In Travancore, a convert from the Syrian sect to that of the Romish church. Pullenkur, a Syrian Christian in Malabar.

PALAYAR, predial slaves of Malabar. The Pale of the Tuluva are a class of Pariahs. See *Kanagan*; *Slaves*.

PALOHARA. In Rajput mythology, the Palchra corresponds to the Furies of the Romans. Describing a battle, the Rajput poet says, 'The abstraction of Iswara was at an end, joy seized his soul at the prospect of completing his chaplet of skulls (munda-mala). The Yoginis danced with joy, their faces sparkled with delight, as they seized their vessels to drink the blood of the slain. The devourers of flesh, the Palcharas, sung songs of triumph at the game of battle between the Chohan and Chundail.'

PALEGARA or Paleiyakaran, the Polygar of the early English writers. They were semi-independent chieftains in the south of the Peninsula.

PALEMBANG in the early part of the 19th century held the first rank amongst the native states of Sumatra, between lat. 2° and 4° 30'. The town is built on both sides of the Moosee river. It has many crocodiles in the river. During the British occupation of Java, the sultan caused all the Dutch in this town to be massacred, and the British Government at Batavia despatched a force against him under the command of Colonel Gillespie. The sultan fled into the interior with his treasure. With his flight the Malays rose, and were slaughtering the Chinese and other foreign settlers, on which Colonel Gillespie went on in a few light boats, and his party, which consisted of ten persons, himself included, landed among them. At midnight, the main body of troops entered the place, and a town defended by forts and batteries mounting 250 pieces of cannon, was taken possession of without the loss of a single life. A new sultan was soon afterwards placed upon the throne. This Residency of Netherland India is 2558 geographical square miles. In 1880, its population (628,490) comprised—Europeans, 280; Natives, 621,900; Chinese, 4245; Arabs, 1941; others, 124.—*Court*.

PALEMONIDÆ, a family or tribe of macrurous decapodous crustacea. They belong to Milne-Edwards' family of salicoides or shrimps, and his tribe Palemoniens. The genera are, Gnathophylum, Hippolyte, Rhynchocinetes, Pandalus, Lysmata, and Palemon. Hippolyte ventricosus occurs in the Asiatic seas; H. Quoyanus at New Guinea. Rhynchocinetes typus—length, about 2½ inches—is a native of the Indian Ocean.

Palemon, *Fabr.*, the prawn. The species of this useful and delicious genus are numerous. M.

Milne-Edwards records 17, besides the Indian *Palemon brevis* and *P. Coromandelianus* of Fabricius. Some of the species of warm climates attain to a considerable size. *P. carcinus*, of the Indian seas and the Ganges, attains to nearly a foot in length, and *P. Jamaicensis*, of the Antilles, is from 10 to 12 inches long. The prawns generally inhabit sandy bottoms near the coasts, but some are found at the mouths of rivers, and far up. They mostly boil red. The better known are—

Palemon natator, *Edw.*, Indian Ocean, on Gulf weed. *P. brevis*, *Edw.*

P. Coromandelianus, *Fabr.*

P. longirostris, *Edw.*, Ganges mouth.

P. carcinus, *Edw.*,

P. ornatus, *Edw.*, Amboyna, Waigyou.

P. lamarrei, *Edw.*, Bengal coasts.

P. Tranquebaricus, *Fabr.*, Tranquebar.

P. hirtimanus, *Edw.*, Mauritius.

PALENGA ZEYLANICA. *Thw.* Palengagass, SINGH. A tree 40 to 50 feet high, of the Ambagamowa district in Ceylon, at an elevation of about 9000 feet.—*Thw. Zeyl.* p. 287.

PALERI AMMA, a deity of the non-Aryan Tamil races of the Peninsula. See *Hindu*.

PALESTINE is on the S.W. part of Syria. It gets its name from Philistine, a race who inhabited a tract bordering on the Mediterranean Sea. Palestine was originally inhabited by a number of tribes,—Kenite, Kenizite, Kadmonite, Hittite, Jerezzite, Jebusite, Amorite, Canaanite, Gergashite, Hivite, Phoenician, and Philistine. The desert coast between Gaza, the frontier town of Palestine, and Pelusium or Shur, the frontier town of Egypt, was called by the Hebrew writers the desert of Shur. It was thinly peopled by a race of Arabs named Amalekites.

The country has been intimately associated with the history of several races, and since the middle of the 19th century, a society in Great Britain has employed Captains Warren and Conder, and Colonel Wilson, R.E., in its exploration. East of the Jordan, Captain Conder found among the numerous stone circles, dolmens, and menhirs, already known to exist in Moab, four undoubted great centres round which the monuments are disposed. These are Mushibiyeh, at El Mareighet, also at Minyeh, south of Heshbon, and in the Ghor, near Kefrein. The first of these Captain Conder identified with Bamoth Baal, the second with Baal Peor, the third with 'the top of Baal Peor which looketh towards Jeshimon,' and the fourth with the 'sanctuary of Baal Peor,' in the Jordan valley, where the Israelites worshipped while in Shittim. Also at Ain Heshbon or old Heshbon are an immense quantity of cromlechs. The monuments, which still stand as they stood in the days of Balak, illustrate the religion of the people whom the Israelites were to dispossess. In Palestine itself, Ptolemais, Diospolis, Antipatris, Elia have all completely disappeared as names, and the old designations, Akka (Acre), Lydd, Kefer-saba, Jerusalem, etc., have re-established themselves. Sebaste and Neapolis have, however, succeeded in maintaining themselves, and preventing the return of Samaria and Shechem. Round about Jerusalem lies a circle of interesting sites,—the Mount of Olives, with the Garden of Gethsemane; the Kedron, with its bold ravine; Jericho, with Elisha's picturesque fountain; and the abrupt fall of Ayun Musa, under Mount Nebo.

The tall massive building known as the Haram, which overshadows the city, for 3000 years has covered the patriarchal tombs, sacred to Hebrew and Muhammadan alike, never disturbed since the mummy of Jacob was laid by the side of those of Abraham and Isaac. Jabal Fureid is the huge fortress and burial-place of Herod, the most conspicuous features in the whole landscape of Southern Judea, whence are to be seen the hills of the wide wilderness, rolling in long succession towards the Dead Sea, with the red wall of Moab beyond. In Bethlehem, the church erected over the birthplace of Christianity may lay claim to be the oldest church of Christ in the world, prayer and praise having risen from it without interruption from the day when Helena built it. The simple tomb of Rachel has remained undisturbed, revered, and undisputed, from age to age for more than 3500 years.

Palestine was conquered by the Fatimite Khalifs of Egypt, A.D. 969, and in consequence of the persecution of the Christians by Hakim, between A.D. 996 and 1021, Peter the Hermit, A.D. 1094, began preaching to the nations of Europe a crusade against the Saracens. Crusades followed on this. The eighth and last, under St. Louis, was concluded A.D. 1274.

Palestine shows a total Jewish population of only 15,293 souls. Of these, more than half live in Jerusalem, about 4000 in Safet, 2000 in Tiberias, and 900 in Hebron. The remainder, about 400, are divided between Akka, Haifa, Jaffa, Sichem, and Shefa-Amar.

PALGHATCHERRY, a town in the Malabar district of the Madras Presidency, in lat. $10^{\circ} 45' 49''$ N., and long. $76^{\circ} 41' 48''$ E., and 800 feet above the sea. It is in the only break in the line of the mountains from the Tapti to Cape Comorin. It is 25 miles broad at the town of Palghat, and from 35 to 40 miles long, and has an area of 695½ square miles. It connects the low country on the E. and W., the highest point in its centre being 400 or 500 feet above the sea, and it is traversed by the Madras railway. The mountain on the north, called Vellya Karu Mala, rises 6700 feet. The chiefs are of the Atchen race, and are said to have been Kshatriya Hindus, but to have become degraded below Sudras. They follow descent from the females. There are other chiefs, termed Nair and Naadvalli. The chief rainfall is in June to October. The S.W. monsoon blows through and does not deposit its moisture, though the atmosphere is humid, and the Salem hills intercept the N.E. monsoon. The Palghat ghats are in length about 200 miles, from the gap of Palghatcherry nearly to Cape Comorin. Elevation, from 4000 to 7000 feet, with a spacious table-land 4740 feet; a peaked summit, 6000 feet; another, 7000; Varragherry mountains, 5000 to 6000 feet; near Cape Comorin, at the extreme S., 2000 feet. The west brow of the ghats is, with little exception, abrupt; on the east side the declivity is gradual.

PALI. **TAM**. Irambu in Malabar, Palari in Portuguese, is the Ceylon iron-wood. Its tree grows to about 30 feet in height, and 20 inches in diameter. It is very useful for stocks of anchors, piles for jetty-heads, beams in storehouses and places where strength is required; for such purposes it is found useful and durable. It may be obtained in great quantities at a very moderate rate.—*Edye, Ceylon*.

PALI, an ancient language in India, which has

long ceased to be spoken, but is still used in the Buddhist scriptures of Ceylon, Burma, and Siam. The Pali tongue in Singhalese is called Magadha and Mungata, and in Burmese, Magada-basa. Pali was the mother-tongue of and used by Buddha. The Rupasiddhi is the oldest Pali grammar now extant, and its author, Buddha-Priya, compiled it from the ancient work of Kachhyayana. A quotation from the latter is given in the Rupasiddhi, apparently in the original words. According to this account, Kachhyayana was one of the principal disciples of Sakya, by whom he was selected for the important office of compiling the first Pali grammar, the rules of which are said to have been propounded by Tathagata-himself. This statement seems highly probable; for that teacher must have soon found the difficulty of making himself clearly understood, when each petty district had a provincial dialect of its own, unsettled both in its spelling and its pronunciation. A difficulty of this kind could only be overcome by the publication of some established rules of speech, which should fix the wavering pronunciation and loose orthography of a common language. This was accomplished by the Pali grammar of Kachhyayana, compiled under Sakya's instruction; and the language, thus firmly established, was used throughout India by the Buddhist teachers for the promulgation and extension of the practical doctrines of their faith. In the Buddhist works of Ceylon, this language is expressly called Magadhi, or the speech of Magadha; and as this district was the principal scene of Sakya's labours, as well as the native country of himself and of his principal disciples, the selection of Magadhi for the publication of his doctrines was both natural and obvious. Learned men have, however, entertained diverse opinions as to the Pali. Professor H. H. Wilson has remarked that there are several differences between the language of existing Buddhist inscriptions and the Magadhi of Pali grammars; but these differences are not such as to render them unintelligible to those whom Priyadasi (Asoka) addressed in his pillar edicts in the middle of the 3d century B.C. Professor Wilson admits that the Pali was most likely selected for his edicts by Priyadasi, 'that they might be intelligible to the people,' but he is of opinion that the language of the inscriptions was rather the common tongue of the inhabitants of Upper India than a form of speech peculiar to a class of religionists; and he argues that the use of the Pali language in the inscriptions is not a conclusive proof of their Buddhistical origin. But, as opposed to this view, it is a well-known fact that the Brahmans have never used any language but Sanskrit for their religious writings, and have stigmatized the Magadhi as the speech of men of low tribes. In their dramas, also, the heroes and Brahmans always speak Sanskrit, while the use of Magadhi is confined to the attendants of royalty. Professor Wilson has, however, identified the Magadhi with Prakrit, the use of which, though more honourable, was still confined to the principal female characters; but the extensive employment in the dramatic works of the Brahmans of various dialects, all derived from one common stock, seems to prove that they were the vernacular language of the people. In this vernacular language, whatever it was, whether the high Prakrit of the Saurasenas, or the low Prakrit of the Magadhas, we know certainly that

the Vinaya and Sutra, or the practical doctrines of Sakya, were compiled, and therefore also promulgated. Cosma, in Prinsep's Journal, p. 503, has used the term Prakrit as comprehending all the written and cultivated dialects of Northern India. Prakrit means 'common' or 'natural,' in contradistinction to the 'artificial' or 'refined' Sanskrit. In the opinion, however, of Turnour, the celebrated Ceylon scholar, the Pali is a 'rich and poetical language, which had already attained its present refinement at the time of Gotama Buddha's advent' (n.c. 588). According to Sir William Jones, it is 'little more than the language of the Brahmins, melted down by a delicate articulation to the softness of Italian.' To General Cunningham it seems to bear the same relation to Sanskrit that Italian does to Latin, and a much nearer one than modern English does to Anglo-Saxon. The nasal sounds are melted down, the compounds are softened to double and even simple consonants, and the open vowels are more numerous. It is the opinion of many European scholars that the Pali language is derived almost entirely from the Sanskrit, and in this opinion General Cunningham fully coincides. Messrs. Burnouf and Lassen, who jointly formed a Pali grammar, state, as the result of their labours, that Pali is almost identical with Sanskrit; and Professor Lassen, at a later date, when more conversant with the Pali books, states authoritatively that the whole of the Prakrit language is derived from the Sanskrit. Turnour also declares his conviction that all researches tend to prove the great antiquity of Sanskrit. Professor Wilson and James Prinsep are likewise of the same opinion. This conclusion seems self-evident, for there is a tendency in all spoken languages to suppress dissimilar consonants, and to soften hard ones; as in the Latin Camillus for the Tuscan Cadmilus, and the English farthing for the Anglo-Saxon feorthing; or, as in the Pali assa, a horse, for the Sanskrit aswa, and the Pali majha, middle, for the Sanskrit madhya. There is also a natural inclination to clear away the semi-vowels and weaker consonants, as in the English king for the Anglo-Saxon kyning, or as in the Pali Olakita, the seen (i.e. Buddha), for the Sanskrit Avalakita; and in the Pali Ujjeniya, a man of Ujain, for the Sanskrit Ujjayaniya. It is always, therefore, easy to determine between any written languages that resemble each other, which of the two is the original, and which the borrowed; because letters or syllables are never added, but, on the contrary, are always suppressed or curtailed in the process of time. The Pali is therefore without doubt derived from the Sanskrit, and must, moreover, have been a spoken language for many centuries. For the publication of his esoteric theories regarding the origin of the world and the creation of mankind, Sakya made use of the Sanskrit language only. But the perfect language of our day perhaps owes much of its refinement to the care and sagacity of that great reformer, for it seems highly probable that Katyayana, the inspired saint and lawgiver who corrected the inaccuracies of Panini's Sanskrit grammar, is the same as the Kachhyayana who compiled the Pali grammar during the lifetime of Sakya. Katyayana's annotations on Panini, called Nartika, restrict his vague rules, enlarge his limited ones, and mark numerous exceptions to others. These

amended rules of Sanskrit grammar were formed into memorial verses by Bhartrihari, whose metrical aphorisms, entitled Karika, have almost equal authority with the precepts of Panini, and emendations of Katyayana. According to popular tradition, Bhartrihari was the brother of Vikramaditya, the founder of the Hindu Samvat, which dates from 57 B.C. The age of Katyayana is unknown; but as he flourished between the date of Panini, in about 1100 B.C., and that of Bhartrihari, in 57 B.C., there is every probability in favour of the opinion that he was one of the disciples of Buddha. But this identification of the two greatest grammarians of the Sanskrit and Pali languages rests upon other grounds besides those mentioned above. Colebrooke, Wilson, and Lassen have all identified the commentator on Panini with Vararuchi, the author of the Prakrit grammar called Prakrita Prakassa, or Chandrika. Of Vararuchi, nothing more is known than that his work is the oldest Prakrit grammar extant, and that his body of rules includes all that had been laid down by earlier grammarians regarding the vernacular dialects. The identification is still more strikingly confirmed by the fact that Kachhyayana is not a name but only a patronymic, which signifies the son of Kachiho, and was first assumed by the grammarian himself. If, therefore, Vararuchi Katyayana is not the same person as Kachhyayana, he must be posterior to him and of the same family. We shall thus have two Katyayanases of the same family living much about the same time, each of whom compiled a grammar, which is much more improbable than that the two were one and the same person. The probable identity of the two great grammarians seems to offer an additional reason for considering Sakya Muni as one of the chief benefactors of his country. For we must not look upon Sakya Muni simply as the founder of a new religious system, but as a great social reformer who dared to preach the perfect equality of all mankind, and the consequent abolition of caste, in spite of the menaces of the most powerful and arrogant priesthood in the world. We must regard him also as a patriot, who, in spite of tyrannical kings and princes, had the courage to incite his countrymen to resist the forcible abduction of their wives and daughters by great men. To him the Indians were indebted for a code of pure and practical morality, which inculcated charity and chastity, performance of good works, and abstinence from evil, and general kindness to all living things. To him, also, they owe the early refinement and systematic arrangement of their language, in the selection of the learned Katyayana as the compiler of the Sanskrit and Pali grammars. The Pali books examined and abstracted by Mr. Turnour consist of the Pitakattayan, the Atthakatha, and the Mahawansa. The first is quasi the gospel of Buddhists. It is stated in the Mahawansa that the Pitakattayan was brought to Ceylon by Mahinda, the son of Asoka, in the 18th year of his father's reign, that is, in 306 B.C., in the exact Pali form in which it now exists.—*Prinsep's Tibet*, p. 148; *Cunningham's Bhilsa Topes*; *Weber*; *Hardy*.

PALI. The Scythic Pali are supposed to have been the shepherd invaders of Egypt.

PALI, a small town in the Jodhpur state in Rajputana. Plague broke out here, and spread over Marwar, between 1830 and 1840.

PALIAR or Pular, a race of herdsmen on the Annamallay hills in Coimbatore.

PALIBOTHTHA, the ancient Greek name of Pataliputra city, near the confluence of the Son river with the Ganges. Few old places in India recall to mind so many associations as the Pataliputra of the Hindus, the Palibothra of the Greeks, and the Po-to-li-tae of the Chinese, all referring to the city which is known in our day under the name of Patna. Rennell says (Memoir, pp. 52-54) Pliny's Palibothra is clearly Patna, and as Strabo placed it 425 miles, or so many parts in 1063 of the distance from the confluence of the Jumna to the mouth of the Ganges, he probably meant the same place. The name of Pataliputra does not occur either in Menu or the Mahabharata, the capital of ancient Magadha having in those ages been Rajagriha. It was in the middle of the 6th century B.C. that Ajata Satru founded the city of Pataliputra. This prince, says Lassen, appears to have long had the intention of conquering Vasali, for it is recorded that his two ministers, Sunitha and Vasyankara, founded, in the village of Patali, a fortress against the Vriji. This took place a short time before the death of Buddha. Under the ancient name of Pataliputra, the place stands before the eyes of the modern traveller as the capital of the Nanda dynasty, of Chandragupta, and of Asoka, as the scene where were played those outwitting Machiavellian policies between Rakshasa and Chanakya, which form the subject of the drama of Mudra Rakshasa and Chanakya; where Megasthenes had arrived on an embassy from Seleucus, and resided several years, leaving behind a record that possesses no ordinary claims upon our attention; whence Asoka issued his famous edicts about Buddhism, identified by General Cunningham with the modern Besarh, 20 miles north of Hajipur. It is from the writings of Megasthenes that we learn that Palibothra was 8 miles long, and $1\frac{1}{2}$ broad, defended by a deep ditch and a high rampart with 570 towers and 64 gates, a state of grandeur of which not a tithe is possessed by the present city. In the time of the Muhammadan conquest, the capital of Behar is said to have been removed to the town of that name, and its raja to have become so degenerated as to abscond from his capital. As described by Ralph Fitch, Patna, in the end of the 16th century, was a large city, but contained only houses of earth and straw. Of the towers and gateways spoken of by Megasthenes, or of the lofty pillars, columns, and turrets of the Suganga palace, mentioned by the Hindu dramatist, not a trace exists surviving the ravages of time and war. Muhammadans now form a large part of the population of Patna, 40,000, and from the district 100,000 of them assemble at the Imambarah to celebrate the Maharram. At Patna is a monument over 150 Englishmen massacred (1763) in cold blood by Sumru (Reinhardt), under the orders of Mir Cassim. It is a tall, slender column of alternate black and yellow stone, that lifts its head about 30 feet high in the old English burial-ground at Patna.—Bunsen, iii. 520; Tr. of Hind. i. 113; As. Res. v. 273, viii. 333, xiv. 380.

PALINURUS of Fabricius, a genus of crustacea which forms the tribe of Langoustiens of Milne-Edwards, being the fourth of his family of euirasid macrurians, and characterized by the existence of antennæ of the ordinary form, and

the absence of didactylous pincers. It is the type of the family Palinuridae. The Palinuri, or sea-crawfish, have the body nearly cylindrical. Their carapace is nearly straight from before backwards, very convex transversely, and presents about its anterior third part a deep transverse furrow, which is directed forward on each side, and separates the stomacal from the cardial and bronchial regions, the only ones which can be well distinguished. *P. fasciatus*, of the Indian Ocean, has the antennular ring armed above with two conical rather large teeth situated near its anterior border; carapace armed with a small number of spines, and slightly granular, or only dotted on its posterior half; lateral tooth of the anterior border of the carapace small; no spines on the median line of the stomacal region; median tooth of the anterior border of the epistome very large; length about a foot. *P. vulgaris*, the common sea-crawfish or spiny lobster, Langoustate of the French, inhabits the seas of Europe.—Milne-Edwards in Eng. Cyc. See Crustacea.

PALITANA, a native state within the British Political Agency of Kattyawar, in the Bombay Presidency, lying between lat. $21^{\circ} 23' 30''$ and $21^{\circ} 42' 30''$ N., and long. $71^{\circ} 31'$ and $72^{\circ} 0' 30''$ E.; area, 99 square miles. Satrunjaya hill, which rises above the town of Palitana, is covered with Jain temples, and is the resort of innumerable pilgrims, for whom a fixed sum is paid yearly by the Brak community to the Palitana chief. It is sacred to Adinath, and each temple contains images in marble of Adinath, or of some of the Tirthankara; and perhaps no fabric of human workmanship in India is more calculated to arouse wonder, admiration, and lasting remembrance, than Palitana in its unique and mysterious perfection. Satrunjaya rises nearly 2000 feet, and is between 2 and 3 miles in ascent, taking the sinuosities of the route into account. At the foot of the ascent there are steps with many little canopies or cells, a foot and a half to three feet square, open only in front, and each having in its floor a marble slab carved with the representation of the soles of two feet (charan). Higher up is a small temple of the Hindu monkey god, Hanuman. Still higher is the shrine of Hengar, a Musalman pir. The top of the hill consists of two ridges, each about 350 yards long. The buildings on both ridges, again, are divided into separate enclosures, called tuk, generally containing one principal temple, with varying numbers of smaller ones. Each of these enclosures is protected by strong gates and walls, and all gates are carefully closed at sundown. The principal temple of the Khartarvasi tuk is that of the Chaumukh or 'four-faced' Jaina, occupying the centre. It stands on a platform 2 feet above the level of the court, and 57 feet wide by about 67 in length. Over this rises the tower or vinana to a height of 96 feet from the level of the pavement.—Imp. Gaz. See Architecture; Pagoda; Sculpture.

PALIURUS RAMOSISSIMUS, Poiret, of China and Japan, and *P. spinachristi*, Muller (*P. aculeatus*, Lambert), from the Mediterranean to Nepal, are useful for hedge plants.—Von Mueller.

PALKAR-PAL, a Toda dairymann; lit. milkman.

PALK. BAY and Palk Strait are between Ceylon and the Peninsula of India, and separate the northern part of Ceylon from the mainland.

The strait is formed between Point Calimere and Point Pedro. It is 35 miles wide at its entrance.—*Findlay*.

PALKONDA, a range of mountains in Cuddapah district, Madras Presidency, lying between lat. 13° 43' 30" and 14° 27' N., and between long. 78° 56' and 79° 28' 30" E., and 2500 feet above the sea.

PALLA, a measure of capacity of 30 payali or 120 seers; also a measure of weight of 120 seers, for groceries, betel-nut, oils, etc., the same as the Pala of Madras.

PALLADIUS, a European traveller in Persia, a few years before the Chinese Fa Hian. He was the author of a tract, *De Moribus Brachmanorum*. It was embodied in the *Pseudo-Callisthenes*, published by Muller (*Script. de Alex. Magno*, pp. 103, 104). In it there is a fanciful account of the *Bisadae*, the gatherers of pepper. They are described as a dwarfish and imbecile race, with big heads, and long, straight, unclipped hair, who dwell in rocky caves, and from the nature of their country are expert at climbing cliffs, and thus able to gather the pepper from the thickets.—*Yule, Cathay*, i. pp. 144, 145.

PALLAN, Pallar, or Puller are a slave race attached to the Vellala agriculturists of the south of India. The Mallar are the agricultural labourers of the Pallar tribe. Pallan is applied specially to one who works in the fields. Their tribal title is Kudumpan, which means a headman or chief.—*Wils. Glossary*.

PALLAS, an author who wrote on the *Natural History of Central Asia*. His travels in different parts of the Russian empire and in Central Asia were translated into French, and published in Paris in 1788-93.

PALLEGOIX. The Right Rev. J. P. Pallegoix, Vicar-apostolic of Siam, Bishop of Mallos, died on the 18th of July 1862. He had been long resident in the Malay Peninsula and Siam, and wrote on Siam.

PALLE-SATTERAM. TAM. The lizard science. Lizards are supposed to give warning by chirping of approaching good or evil.—*Hardy*.

PALLI, a servile tribe in the south of India, bondsmen or slaves of Brahman proprietors.—*Wilson*.

PALLI. BENG., CAN., MALEAL., TAM., TEL. A hamlet, a village, a town, as Tri-sira-palli (Trichinopoly), the city of the giant Trisira. It is the equivalent of the Canarese Halli in Harpanhully, and is written polly, palle, palliya, pally, and pilly. See Palliam.

PALLI, an ancient shepherd race dwelling near the river Cali. They seem to have been a branch of the Kirata. A Palli race or Pala seem to be the Siripala of Ptolemy. In the Puranas, the Palla, Kirata, and Ahira are all classed as shepherds. The Palla are represented as in all parts of India. The Palla south of the Nerbadda, on being overthrown by the Chalukya in the 4th century, turned to the south, and found refuge in the Chola kingdom. The Tondaman Raja of Pudukottah takes the title of Pallawa. The Pallava or Palli were in the Dekhan in the 4th and 5th centuries, and in the Carnatic in the 5th or 6th. A Palli shepherd dynasty reigned in Bengal up to A.D. 1100, and are supposed by Sir Henry Elliot to have been Ahir. Mr. Colebrooke concludes that the Pal or Palla reigned from the 9th to the latter part of the 11th century. The shepherd Kurumbar (Kuru,

a sheep), in the south of India, were dominant in several places till the 12th century.—*As. Res.* iii. pp. 303-459.

PALLIA. HIND. A monumental pillar amongst the Rajputs.

PALLIAM, Pale, Palevu, Paleya, Paleiyau, Pollan, Pollem, Pallim, Polemu,—Tamil, Telugu, and Carnatic words signifying a tract of country subject to a petty chieftain. In Madras town, a district occupied by particular races, as the Upa-palliam, Wadara-palliam, the wards of the Upara and Wadara races.

PALLIWAL. Next to the Rajputs of Jeysulmir, equalling them in numbers and far surpassing them in wealth, are the Palliwal. They are Brahmans, and denominated Palliwal from having been temporal proprietors of Palli, and all its lands, long before the Rahtor colonized Marwar. Tradition is silent as to the manner in which they became possessed of this domain, but it is connected with the history of the Palli or pastoral tribes, who from the town of Palli to Palit'hana, in Saurashtra, have left traces of their existence. The Palliwal Brahmans, as appears by the annals of Marwar, held the domain of Palli when Seoji, at the end of the 12th century, invaded that land from Kanouj, and by an act of treachery first established his power. Their subsequent migration to the desert of Jeysulmir is attributed to a period of a Muhammadan invasion of Marwar, when, a general war contribution (dind) being imposed on the inhabitants, the Palliwal pleaded caste and refused. This exasperated the raja, for as their habits were almost exclusively mercantile, their stake was greater than that of the rest of the community, and he threw their principal men into prison. In order to avenge this, they had recourse to a grand 'chandi,' or immolation, on which he issued a manifesto of banishment to every Palliwal in his dominions. The greater part took refuge in Jeysulmir, though many settled in Bikanir, Dhat, and the valley of Sind. In the early part of the 19th century almost all the internal trade of the country passed through their hands, and it was chiefly with their capital that its merchants traded in foreign parts. They were the Metayer of the desert, advancing money to the cultivators, taking the security of the crop, and buying up all the wool and ghi (clarified butter), which they exported to foreign parts. They also rear and keep flocks. They were then subject to the visits of the Maldote, Tejmalote, and other plunderers. The Palliwal never marry out of their own tribe, and, directly contrary to the laws of Menu, the bridegroom gives a sum of money to the bride. There is little doubt that the Palliwal Brahmans are the remains of the priests of the Palli race, who, in their pastoral and commercial pursuits, have lost their spiritual power.

PALLONARUA. In Ceylon, Anaradhapura is a deserted city. It seems to have become the capital of Ceylon about B.C. 400. About B.C. 250 it became one of the principal capitals of Buddhism in the east, which it continued to be till about A.D. 750, when the repeated invasions of the Tamil races led to its abandonment for Pallonaruwa, which continued to be the capital for some centuries. Anaradhapura has within its limits ruins of topes or dhagobas, the Lowa Maha Paya, Abhayagiri, Jetavana, Thuparamaya, Lankaramaya, Salla, and Ruwanweli. It was erected B.C. 250, to

hold the right jawbone of Buddha. Subsequently, at the beginning of the 4th century, a tooth was brought from India, and deposited in a small building erected for the purpose on one of the angles of the platform of this building. The Lowa Maha Paya, or Great Brazen Monastery, was erected B.C. 161, by king Dattagaimuni. It is 225 feet square, and with 9 storeys, and 100 cells for priests. In A.D. 285, Mahasena destroyed it, but it was re-erected of 5 storeys by his son. It never regained its previous fame, and fell into decay, and the 1600 pillars which once supported it alone remain; they are unhewn blocks of granite. The quadrupeds sculptured on the Anuradhapura city, also at Hullabid in Mysore, and at Amravati, are the elephant, lion, horse, and bull; the birds are the hausa or sacred goose, or pigeons. Besides these, there is at Anuradhapura a temple called Iswaramunya, partly cut in the rock, partly structural. But to Buddhists the most sacred object there is the Bo Tree, which was brought there by Mahinda and Sangamitta, son and daughter of Asoka, who introduced Buddhism into Ceylon.

The Pallonara temples were mostly built A.D. 1153-1186, by Prakrama Bahu. Its rock-cut structure, called Gal Vihara, has a seated figure of Buddha 16 feet in height, one standing figure 25 feet, and one recumbent 45 feet long, in the conventional attitude of his attaining Nirvan. In front is the Jetavana Rama temple, 170 by 70 feet, with an erect statue of Buddha 58 feet in height. The Rankot Diagoba and the Mahal Prasada are also of interest, the last being a representative of the seven-storeyed temples of Assyria. See Architecture.

PALM, the term applied in Southern India to the bars of iron manufactured from Cutties.

PALMA BRAVA, the Nibong of the Tagala of Mindoro, used by the wild tribes of Mindoro to form their bows and point their arrows.

PALMA CHRISTI, Castor-oil palm.
Ricinus communis, LAM. | Jarak, MALAY.
 Kaliki, MADURESE, SONDA. | Tangan-Tangan, . . TAG.

Called Christ's palm, because where the true palms are not found, it is carried on Palm Sundays.

PALMANAIR, in lat. 13° 11½' N., long. 78° 47' 17" E., in the Carnatic, a small town on an open plateau west of Chitore. The dak bungalow is 2618 feet above the sea. It is 25 miles N. of the railway station of Goriatum. Occasional instances of fever have given it a bad name. The thermometer at Palmanair in December 1861 ranged from a minimum of 54° to a maximum of 74°.

PALM BOOKS. The books and separate leaves employed for writing on in Asia, with an iron style, are made from the leaves of the tidipat tree, *Corypha umbraculifera*, also from the Tara, Tar-et, or Tallier of the Bengalese, *C. taliera*, *Rorb.*, and from the leaves of the palmyra palm. All the Burman books are made of the leaf of a species of *Corypha*; but the orders that are issued from the Burmese courts are written on strips of the palmyra palm leaf. Those used in Southern India for school-boys' books, for the accounts of shopkeepers, the orders of collectors, and village accounts, are also made of the leaf of the palmyra. The Ola of the Tamil people is the dried palmyra leaf prepared for writing on with a style.—*Mason*.

PALMER, a term applied to the pilgrims from

Palestine, from the staff of the date-palm branch which each brought back.

PALMINE may be prepared from the castor-oil, and possibly from other oils also, by treating them with nitric or nitrous acids. A process is given in Brande's Manual of Chemistry, xi. p. 1257, and is supposed to be the substance which was, about A.D. 1857, patented for the use of railway carriages in British India; and whether as regards its origin, the facility of making it, the abundance of the castor-oil plant in India, its consistency and cheapness, it well deserves attention. When nitrous or nitric acid is made to act upon castor-oil, it is converted into a solid wax-like substance; and a similar, though much more rapid, result takes place when this oil or olive oil are similarly treated with nitrate of mercury. Castor-oil is the only one of the drying oils which is susceptible of this species of solidification. On adding nitrous acid to castor-oil, a yellow liquid is at first formed, and the time required for its solidification varies with the quantity of acid employed; when about a twentieth part of acid is used, it solidifies in seven or eight hours, and this or somewhat less is the best proportion. If too much acid be used, a third part, for instance, or a half, the temperature rises to 130° or 140°; effervescence ensues, and the oil becomes opaque, and instead of indurating remains viscid. Palmine thus obtained is yellow, but when purified by solution in boiling alcohol, it is white, of a waxy fracture, and requires a temperature of about 150° for its fusion. When this is kept for some months, it occasionally acquires a resinous appearance, and presents an almost vitreous fracture. A large and profitable trade might be had in palmine made from the cheap oils of Southern Asia, the difficulty of transporting which while fluid is well known.

PALM OIL.

Huile de palmier,	FR.	Accete de palma, . .	SP.
Huile de seneegal,		Panam yenne,	TAM.
Palmol,	GER.	Thati nuna,	TEL.
Olio di palma,	IT.		

This is a fatty substance, obtained from the fruit of several species of palms; that of the *Elais Guineensis*, growing on the western coast of Africa, has the consistence of butter, a yellowish colour, and scarcely any particular taste, and becomes rancid on being kept for any length of time. It is chiefly used in Britain for the manufacture of toilet soap, pomade perfumery; also in medicine and surgery. In 1880, 90,219 cwt. of palm oil were imported into Britain, valued at £1,026,378; and of coconut oil, 64,059 cwt., value £317,828. *Elais melanococca*, *Gertn.*, is a native of America; both species might be profitably introduced into India. The *Cocos butyracea* and *C. nucifera* also yield palm oils.—*Seeman*; *M.C. Comm. Dict.*

PALMS.

Nakhlab,	ARAB.	Palmier,	FR.
Palmc,	DAN.	Tar, Narel, Send, . .	HIND.
Palm,	DUT., SW.	Palma, IT., PORT., RUS.,	SR.

The palm trees or palm tribe of plants belong to the order *Cocconæ* or *Palmæ*, the *Palmaceæ* of Lindley. They grow alike in the eastern and in the western hemispheres. Particular species are confined to their own peculiar localities, but *Cocos nucifera*, *Acrocomia*, *Sclerocarpa*, and *Borassus flabelliformis* are spread over many lands. The number of known species scattered over the world amount to over 1000. Of these, not a few love

the humid banks of rivulets and streams; others cling to the sea-shores, and some ascend into alpine regions. Some collect into dense forests, others spring up singly or in clusters over the plains. Writers of systematic botany have arranged them differently, one of the most recent arrangements being into seven tribes,—Borassineæ, Coryphineæ, Phœnicineæ, Arecineæ, Cocoinæ, Lepidocaryineæ, and Nipineæ.

i. Borassineæ—

Borassus flabelliformis, Linn., all India.

ii. Coryphineæ—

- Corypha elata*, Roxb., Bengal.
- C. gebanga*, Bl., Burma, Java.
- C. macropoda*, Kurz, Andamans.
- C. rotundifolia*, Lam., Moluccas, Cochin-China.
- C. taliera*, Roxb., Bengal.
- C. umbraculifera*, Linn., Ceylon, Malabar, Bengal, Burma.
- Chamaerops Khassiana*, Griff., Khassya.
- C. Martiana*, Wall., Kumaon, Nepal.
- C. Ritchiana*, Griff., Trans-Indus.
- Licuala acutifida*, Mart., Malay Peninsula.
- L. longipes*, Griff., Mergui.
- L. pulidosa*, Griff., Andamans.
- L. peltata*, Roxb., Assam.
- L. pumila*, Bl., Java.
- L. rotundifolia*, Bl., Java.
- Livistona Jenkinsia*, Griff., Sikkim, Assam.
- L. speciosa*, Kurz, Chittagong, Pegu, Tenasserim.

iii. Phœnicineæ—

- Phoenix acaulis*, L., Behar, Burma, Central India.
- P. dactylifera*, Linn., S. Panjab, Sind.
- P. farinifera*, Willd., Coringa.
- P. Ousleyana*, Chutia Nagpur, Assam.
- P. paludosa*, Roxb., Sunderbans, Burma, Andamans.
- P. pedunculata*, Neigherries.
- P. sylvestris*, Roxb., all India.

iv. Arecineæ—

- Areca catechu*, Linn., all India.
- A. costata*, Bl., Andamans.
- A. Dicksoni*, Roxb., Malabar.
- A. disticha*, Roxb., Khassya.
- A. gracilis*, Roxb., Sikkim, Assam, Bengal, Burma.
- A. hexasticha*, Kurz, Burma.
- A. humilis*, Willd., Amboyna.
- A. laxa*, Buch., Andamans.
- A. Nagensis*, Griff., Naga hills.
- A. triandra*, Roxb., Chittagong, Burma, Andamans.
- Arenga saccharifera*, Labill., Burma, Malaya.
- A. Westerhoutii*, Griff., Malay Peninsula.
- A. Wigatii*, Griff., Comblatore.
- Bentinckia coddapanna*, Berry, Travancore.
- Caryota obtusa*, Griff., Mishmi hills.
- C. socolifera*, Wall., Arakan, Pegu, Andaman.
- C. urens*, Linn., W. Ghats.
- Wallichia caryotoides*, Roxb., Chittagong.
- W. densiflora*, Martens, Kanaon, Himalaya.
- W. disticha*, T. And., Sikkim.
- W. nana*, Griff., Assam.
- W. Yonca*, Kurz, Yoina mountains.

v. Cocoinæ—

Cocos nucifera, Linn., all East Indies.

Lepidocaryineæ—

- Calamus acanthospathus*, Griff., Khassya.
- C. Andamanicus*, Kurz, Andamans.
- C. arborescens*, Griff., Pegu.
- C. collinus*, Griff., Khassya.
- C. concinnus*.
- C. erectus*, Roxb., Sylhet, Pegu.
- C. extensus*, Roxb., Sylhet.
- C. fasciculatus*, Roxb., Bengal, Burma, Andamans.
- C. flagellum*, Griff., Sikkim.
- C. floribundus*, Griff., Assam.
- C. gracilis*, Roxb., Assam, Chittagong.
- C. grandis*, Griff., Andamans.
- C. Guruba*, Mart.
- C. Helfferianus*, Kurz, Tenasserim, Andamans.
- C. humilis*, Roxb., Chittagong.
- C. hypoleucus*, Kurz, Tenasserim.

- C. inermis*, T. And., Sikkim, Bhutan.
- C. Jenkinsianus*, Griff., Sikkim.
- C. latifolius*, Roxb., Andamans.
- C. leptospathix*, Griff., Sikkim.
- C. longipes*, Griff.
- C. macrocanthus*, T. And., Sikkim, Bhutan.
- C. macrocarpus*, Griff., Bhutan.
- C. Mastersianus*, Griff., Assam.
- C. melanacanthus*.
- C. Mishmiensis*, Griff., Mishmi hills.
- C. montanus*, T. And., Sikkim, Bhutan.
- C. nitidus*.
- C. nutantiflorus*, Griff.
- C. palustris*, Griff., Mergui.
- C. paradoxus*, Kurz, Martaban.
- C. platyspathus*.
- C. polygamus*, Roxb., Chittagong.
- C. quinquenervius*, Roxb., Sylhet.
- C. rotang*, Roxb., E. Indies.
- C. Royleanus*, Griff., Dehra.
- C. schizospathus*, Griff., Sikkim.
- C. tenuis*, Roxb., Assam, Pegu.
- C. tigrinus*, Kurz, Burma, Andamans.
- Korthalsia laciniosa*, Mart., Tenasserim.
- K. scaphigera*, Mart., Andamans.
- Plectocoma Assamica*, Griff., Assam.
- P. elongata*, Mart., Java.
- P. Himalayana*, Griff., Sikkim.
- P. Khassiana*, Griff., Khassya.
- P. macrostachya*, Kurz, Tenasserim.
- Zalacca edulis*.
- Z. Wallichiana*, Mart., Burma.

vii. Nipineæ.

Nipa fruticans, Roxb., Malayana.

Others, mostly of the E. and W. Indies, meriting notice are—

- Aerocoma sclerocarpa*, Macaw palm, W. Indies, Brazil.
- Astrocaryon murumura*, and *A. tucuma*.
- Calamosagus harinifolius*, laciniosus, and ohriger.
- Carludovica palmata* of Panama.
- Ceratolobus glaucescens*, Bl., Java.
- Dæmonorops melarochotes*, Bl., Java.
- Eugeissonia truncata*, Griffiths, Malacca, Penang.
- Euterpe montana* of Venezuela.
- Hyphæne Thebaica*, Doum palm of Egypt.
- Iriarteia ventricosa* or Pashiuba barriguda.
- Jubæa spectabilis*, Chili palm.
- Leopoldinia pulchra*, Java.
- Lodoicea Sechellarum*, Labill, Seychelles.
- Macrocladus sylvicola*, Gr.
- Phytelephas macrocarpa*, vegetable ivory palm.
- Pritchardia Pacifica* of Polynesia.
- Ptychosperma Alexandra*, Von Mueller, Australia.
- Slackia geoniformis*.
- Stevensonia* of the Seychelles.
- Thinnax argentea*, Cuban palm.
- Tucuma vulgare*, Brazil, Rio Nigro, Upper Amazon.
- Verschaffeltia* of Seychelles.

Many of the palms in tropical countries are conspicuous for their lofty pillar-like stems, surmounted by apparently inaccessible fruit or gigantic foliage. Palms appear to prefer a soil in some measure saline, although many species are inhabitants altogether of inland districts, and even of high mountains. Their geographical limits appear to be within lat. 36° N. in America, lat. 44° N. in Europe, lat. 34° N. in Asia, and lat. 88° S. in the southern hemisphere. Their powers of migration are extremely small; few of them have been able to cross the ocean without the aid of man. This remark, however, is not applicable so far as regards the cocoanut, which with its keeled fruit sails to the most distant shores. Their favourite stations are on the banks of rivers and water-courses, and the sea-shore, some species scattered singly, and others collected together into large forests. In general they adhere to the soil by clusters of strong simple roots, which not uncommonly form a hillock elevated above the surface

of the ground. Their trunks are solid, harder on the outside than the centre, and are sometimes, as in the cane-palms, coated by a layer of silicious matter; they are usually quite simple, growing exclusively by a single terminal bud, called in the oreodoxa and areca its cabbage, and eaten as a delicacy when boiled; but in the hyphene, or doum-palm, they are regularly forked. In the majority of the order the stem is cylindrical, but in some it is thickest at the base, and in others swollen in the middle; occasionally it is defended by strong hard spines, but is more frequently unarmed, and marked by rings which indicate the places whence the leaves fell off. The leaves, called fronds by Linnæus, are alternate, with a very hard epidermis and a distinct petiole, from the base of which a coarse network, called reticulum, sometimes separates next the trunk; they are usually either pinnated or fan-shaped, but are occasionally nearly split in two; their veins are parallel, the spaces between them plaited, and the whole size sometimes very great, as in the fan-palm, in which specimens have been seen as much as 18 or 20 feet in breadth. The flowers appear in paniced spikes from the inside of hard dry spathes, which are often boat-shaped, and, although small, they are sometimes so extremely numerous that each panicle will weigh many pounds. They are generally hermaphrodite, but often monœcious, dioecious, or polygamous. The calyx and corolla consist each of three pieces, which are either distinct or more or less united. The stamens vary in number, from three to a large multiple of that number, and bear two-celled linear anthers, which open along their inner face. The ovary consists of three carpels, which are sometimes distinct, sometimes consolidated, and occasionally in part abortive, so that the ovary is only one-celled. The ovaries are almost always solitary, and erect in each cell, but sometimes two are present, which in that case stand side by side; they are orthotropous in some genera, and anatropous in others. The styles are very short, the stigmas simple. The fruit varies extremely in its consistence and appearance. Sometimes it is three-celled, often one-celled. In some species, as the cocoanut, it is a kind of drupe covered by a coarse fibrous rind; in others it is a soft, sweet, eatable pericarp, as in the date; in others its surface is broken up into lozenge-shaped spaces, as in the sagus, whose fruit looks as if covered with scale armour. The seed is single, either solid or hollow, and consists principally of albumen of a fleshy, oily, horny, or cartilaginous texture, within which is lodged a very small cylindrical embryo at some part of the surface distant from the hilum.

'This natural order of plants is one of the largest, the most beautiful, as well as the most useful, of the whole vegetable kingdom. Palms are associated with the most sublime truths of Christianity. In everyday life we speak of our "palmy days," and "carrying off the palm," as happy and excellent times and seasons of rejoicing. In the Old Testament, the palm-tree is first mentioned as the tamar, in Exodus xv. 27, but afterwards frequently. Psalm xcii. 12, 13, and 14, says the righteous shall flourish like a palm-tree; and in Canticles vii. 7, the erect and slender form of woman is compared to the palm: "Lo, thy stature is like a palm-tree, and thy bosom like clusters of dates."

In the temple of Solomon were pilasters made in the form of palm-trees. A branch of a palm was a signal of victory, and was carried before conquerors in the triumphs. They were borne before Christ in his way to Jerusalem, as in John xii. 13; and allusion is made to this in Revelation vii. 9.

'They are remarkable for the many useful purposes they are calculated to fulfil. They furnish many of the necessaries, comforts, and luxuries of life. In household economy, parts of them are formed into spoons, and cups, and ladles, and lamps, and hats, and clothes, and combs, hammocks, bowstrings, fishing lines, and fish hooks. The light rafters of the houses are obtained from the straight cylindrical trunks of the Java palm (*Leopoldinia pulchra*), the date, and the palmyra tree. The sweeper of the crossings of London holds in his hand a broom, the fibrous portion of which was cut by the wild Indians of Brazil from the stems of a palm. The gentleman who prides himself on his Penang Lawyer is but carrying a young plant of the *Licuala acutifida*. The knob of the lady's parasol is formed from a *Coquilla* nut turned into that shape. The chip hats, so extensively worn on fine summer days, are made of the leaves of a Cuban palm (*Thrinax argentea*). Heaps of dates are to be seen in all the shops of Europe, which were gathered by the Bedouin Arabs, or on the borders of the great desert of Sahara; and cocoanuts, grown on the shores of the Indian Ocean, in the myriads of islands which form its archipelago, or on the shores of the Caribbean Sea, are sold in every city of the colder regions of the world, where they are ever beheld with unabated curiosity. The cordage and rigging of the ships, and the thick matings used on staircases in Britain, spun and woven, are from the husk of the cocoanut, and many articles of furniture are made from the woods of palms. Toys and ornaments are made from the kernels of the vegetable ivory palm. The stearic candles, so well known, are composed of the fatty substance extracted from the oil-palm and the cocoanut. The sago, which is so useful a food in the treatment of the sick, and which is seen in such varied guise on our tables, is the pith of palms that flourish in many tropical regions; the famous betel-nut dentifrice, formed of the charcoal of that nut, coloured with dragon's blood, is the produce of two palms; and the toilet soaps of Europe are made from palm oils. The roof is thatched with the leaves of palms. In one region, the door of the house is made of the split stems of the Pashiuba palm (*Iriarte exorhiza*). The harpoon for catching the cow-fish is formed of the black-wood of the Pashiuba barriguda (*Iriartea ventricosa*), and in another region the thickly matted leaves of the cocoanut and palmyra serve as a door for the gardens and parterres.'

The palm oils from the *Elæis Guineensis*, and from the cocoanut palm of the East Indies, are extensively used in the west and east. The *Elæis Guineensis* also yields an excellent palm wine. The numerous uses to which the cocoanut palm are applied are familiar even to all who have not seen it. It grows on all the shores of the East and West Indies, and the leaves furnish thatch for dwellings, materials for buckets, baskets, and fences, and make excellent torches. The juice of the flower stem is fermented into palm wine, distilled into arrack, or made into sugar.

The fruit, when green, is filled with a liquid albumen, which is largely drunk as a refreshing liquid; when ripe the albumen solidifies, and is used in cooking, and affords an abundance of oil, which is used in lamps, and in Europe is manufactured into candles. The fibrous rind forms the coir of commerce, made into cordage and cables. The coconut, the date, and others are valued for their fruit; the fan-palm and many more for their foliage, whose hardness and durability render it an excellent material for thatching; the sweet juices of the palmyra, the date, the coconut, and *Arenga* palms, when fermented yield wine; the centre of the sago-palm abounds in nutritive starch; the trunk of an *Iriarte* or *Ceroxylon* exudes a valuable vegetable wax; an astringent matter resembling dragon's blood is produced by *Calamus draco*; many of the species contain within their leaves so hard a kind of fibrous matter, that it is employed instead of needles, or so tough that it is manufactured into cordage; and their trunks are in some cases valued for their strength, and used as timber, or, as in the cane-palm, for their elasticity or their flexibility. The fruit of some is edible, of others abounding in oil. The stems of some species are gorged with farinaceous matter, which may be separated as a starch-like powder, or granulated into sago. The broad leaves, from their great size and hard surface, are useful for thatching the cottages of the poor, or for making umbrellas for the rich. The narrow-leaved kinds are plaited into mats and baskets, or smoothed so as to be fit for writing on; while the leaves of several, when in a young and tender state, are eaten both raw and in a cooked state, and are hence called cabbage-palms. Some abound in strong unyielding fibre, while others form wood which is applicable to all the purposes of timber. Hence several are valuable articles of culture in the countries where they are indigenous, or where the soil and climate are suitable for their growth—as for instance the date-palm in Arabia and Africa, the oil-palm in the west of Africa, the coconut in India and its islands, together with the betel-nut, palmyra, and talipot palms; while the sago, the eju, and the betel-nut palms flourish in the moist warm climates of the Malay Peninsula, and of the Indian Archipelago. The palms abound chiefly in the tropical parts of the Old World, as well as of South America, but a few species extend to rather high latitudes, as an areca to lat. 38° S. in New Zealand, and a sabal (*Chamaerops*, *Auct.*) to lat. 40° N. in North America; while the dwarf-palm, a native of the North of Africa, is now at home in the south of Europe, where even the date-palm is grown in a few sheltered situations, though it is in the hot and dry soil of Arabia and Africa that it attains the greatest perfection, and furnishes a principal part of the diet of its inhabitants, as well as an article of commerce. *Phoenix sylvestris*, a variety or species of the same genus, is common in most parts of India. A *Chamaerops* is found in Nepal, and one on the Khassya hills, at elevations of 5000 to 8000 feet; while *C. Ritchiana* is found in the Khaibar pass, and probably all along the mountainous range from Afghanistan to Sind. In southern latitudes the cocoa and the betel-nut palms are objects of extensive culture, as well as the sago-palms, of which the eju or gomuti of the Malays,

the *Arenga saccharifera* of botanists, is one abounding in sap, which can be used as palm wine or converted into sugar, also yielding at all times strong and durable fibre. The older trees when cut down yield sago, as do *Sagum Rumphii* and *S. laevis*, especially abundant in and near Sumatra, the latter being remarkable among palms for throwing up young plants around it in the same manner as the plantain, *Musa paradisiaca*. It is no doubt to some one of these sago trees that Sir John Maundeville alludes when he says, 'In that land grow trees that bear meal, of which men make bread, white and of good savour; and it seemeth as it were of wheat, but it is not quite of such savour. And there are other trees that bear good and sweet honey, and others that bear poison. And if you like to hear how the meal comes out of the trees,—men hew the trees with a hatchet, all about the foot, till the bark be separated in many parts, and then comes out a thick liquor, which they receive in vessels, and dry it in the sun, and then carry it to a mill to grind, and it becomes fair and white meal; and the honey, and the wine, and the poison are drawn out of other trees in the same manner, and put in vessels to keep.' The leaves of many palms are employed for thatching, for making chattas or umbrellas, punkahs, and hats. The stems of *Licuala peltata*, the Chatta-pat of Assam, are in universal demand in that valley. Scarcely a single ploughman, cow-keeper, or coolie, but has his jhapi or chatta made of chatta-pat. But the leaves of this palm are coarser than those of the toka-pat of the Assamese, which was named *Livistona Jenkinsiana* by Griffith. Colonel Jenkins says that this species of palm is an indispensable accompaniment of every native gentleman's house; but in some parts it is rare, and the trees are then of great value. The leaves are in universal use throughout Assam for covering the tops of dhoolies or palkees, and the roofs of khel boats; also for making the umbrella hats (jhapi) of the Assamese. For all these purposes the leaves are admirably adapted, from their lightness, toughness, and durability. To the above list of useful Indian palms might be added the *Zalacca macrostachya*, used for making baskets and for tying Nipa leaves. The Chinese make cables of the rattan. The *Areca vestiaria* is so called from clothing being made from its fibres, and *Rhapis Cochinchinensis* is employed for thatching, etc. *Lodoicea Sechellarum* is the palm yielding the much famed Cocos de Mer, or double coconut,—for one of which, in the Mauritius collection, a prize medal was awarded at the Exhibition of 1851; its leaves are formed into baskets and flowers, and the nut, formed into a dish, is largely used as a scallop by the Muhamadan fakirs.

The *Chamaerops Khassiana*, fan-palm, the Pakha of the Khassya, grows on the cliffs near Mamloo, on the Khassya hills. It may be seen on looking over the edge of the plateau, its long curved trunk rising out of the naked rocks, but its site is generally inaccessible; while near it grows the *Saxifraga ciliaris* of English gardens, a common plant in the N.W. Himalaya, but extremely scarce in Sikkim and the Khassya mountains. This species of *Chamaerops* is very closely allied to, if not identical with, *Ch. Martiana* of Nepal, which ascends to 8000 feet in the Western Himalaya, where it is annually covered with snow; it is not

found in Sikkin, but an allied species occurs in Afghanistan, called Ch. *Ritchieana*. There are upwards of twenty kinds of palm in the Khaasya district, including *Chamærops*, three species of *Areca*, two of *Wallichia*, *Arenga*, *Caryota*, three of *Phoenix*, *Plectocomia*, *Licuala*, and many species of *Calamus*.

The betel-nut palm, *Areca catechu*, grows throughout the East Indies, and produces the betel-nut, which the people largely use, along with the betel leaf, as a masticatory, and its nut also yields a kind of catechu, and in the mountains of Malabar the poorer people use the nut of the *Areca Dicksonii* as a substitute. The *Arenga*, the gomuti palm of the Eastern Archipelago, yields sago, sugar, palm wine, and black horsehair-like fibres, from which cordage and cables are made. A single tree yields about 150 lbs. of good sago meal, and its sap is largely used as a palm wine, or is boiled down into a thick syrup, and allowed to concrete. Horsehair-like fibres surround the petioles of its leaves. The palm wine from the *Caryota urens* of the Peninsula of India and the *Moluccas* is a valuable product. It is fermented and drunk as an intoxicating beverage, or is distilled to obtain a spirituous liquid. The best trees, during the hot season, will yield 100 pints of sap in 24 hours. The pith of the trunk in old *caryota* trees is made into sago, and baked as bread, or boiled in the form of a thick gruel. The different species of *Calamus* furnish the canes and rattans of commerce. They are largely used in the East Indies as the linings of bedsteads and chairs, as screens, and to form ladders and cables. *Sagus lævis*, *Rumph.*, of the Eastern Archipelago, and *S. farinifera*, *Gærtn.*, of the Malay Peninsula and the Archipelago, both yield the sago of commerce. The people of the *Moluccas* live to a large extent on the pith of the latter tree. The leaves of the tali tree of Ceylon and the *Moluccas*, the talipot or great fan-palm of Ceylon, the *Corypha umbraculifera*, are of great value as a thatching material; and the leaves of the tara-palm of Bengal, the *Corypha taliera*, and those of the palmyra, are used as book leaves to write on, with iron styles, and they are also used to tie the rafters of their houses. The species of the date-palms, the genus *Phoenix*, yield several useful products. *P. sylvestris*, the wild date-palm, grows abundantly throughout British India. Its fruit is of no value, but its juice is largely used as a palm wine, and is boiled into sugar, which is to some extent exported to other countries. This wild date tree is met with in almost every part of British India. It flourishes in the alluvial soils which cover the south-eastern portion of Bengal proper, excepting only such tracts as suffer entire submersion annually from the overflow of their rivers, as is common in portions of the Dacca, Mymensing, and Sunderbun districts. The extent of country best suited for its growth is an area stretching east and west about 200 miles, and north and south about 100 miles, and comprehending by a rough estimate about 9000 square miles within an irregular triangular space. When not stunted in its growth by the extraction of its juice or sap for toddy drinking or for sugar, it is a very handsome tree, rising in Bengal from 30 to 40 feet in height, with a dense crown of leaves spreading in a hemispherical form from its summit. These

leaves are from 10 to 15 feet long, and composed of numerous leaflets or pinnules about 18 inches long. The trunk is rough, from the adherence of the bases of the falling leaves; this serves to distinguish it at a glance from the smooth-trunked cocoanut palm, which in its leaves only it resembles. The fruit consists more of seed than of pulp, and altogether is only about one-fourth the size of that of the true date of Arabia. For its palm wine, the stem is notched and sloped, and a spout made of its frond. The toddy of the cocoanut, the palmyra, and the gomuti palms, is obtained from the spathe. In the gomuti, palmyra, and cocoanut, the spathe is cut across, and the juice flows into a pot.

The people of Nejd believe that the more their date-palms, *Phoenix dactylifera*, are watered, the more syrup will the fruit produce; they therefore inundate the ground as often as possible. At El Jauf, where the date is peculiarly good, the trees are watered regularly every third or fourth day. The stem of *Phoenix farinifera* contains fecula, which is used as food in times of scarcity, its leaflets are wrought into mats, and the common petioles are split into three or four, and used to make baskets. Its fruit is edible. Walking-sticks are made of the trunks of the *P. paludosa*, and the trunks are used as rafters and the leaves for thatch.

The *Stevensonia* and *Verschaffeltia* of the Seychelles are eminently suited for decorative purposes. The former is spoken of as *Roi de la Famille*, the latter as its worthy rival, from its grand shape and its rich foliage.

The *Pritchardia Pacifica* palm of Polynesia is the exclusive property of the aristocracy, and not allowed to be used for common purposes.

The Chinese make overcoats of the leaves and fibres of *Chamærops excelsa*, *Thunberg*. In the western hemisphere, the Chili palm, *Jubæa spectabilis*, *Darwin*, is felled to obtain its syrup-like sap, called palm honey, of which a good tree will yield ninety gallons. The costly Panama hats are made of the leaves of the *Carludovicia palmata*. A useful oil is obtained from the hard-shelled nuts of the *Acrocomia sclerocarpa* of the West Indies and Brazil. The vegetable ivory nuts of the *Phytelephas macrocarpa* are extensively used. Species of the genus *Astrocaryon* of the Upper Amazon yield several commercial products; the kernel of *A. murumura* nearly approaches to vegetable ivory in hardness; the stony seeds of *A. tucuma* are turned into rings; and the beautiful hammocks of the Upper Amazon are made of tucum thread, prepared from the *A. vulgare*. The detailed account of the more important of these palms will be found under their respective names in the alphabetical arrangement. — *Burton's Mecca*, ii. p. 175; *Powell's Handbook*, i. p. 512; *Hartwig; Griffith's Palms of British East India; Roxb. Fl. Indica; Seeman on Palms; Hooker, Him. Journ.* ii. pp. 267, 280, 281; *Schow in Jameson's Edinburgh Philosophical Journal; Mr. H. Robinson in Cal. Cat. Ex. of 1862; Voigt, Hortus Suburbanus Calcuttensis; Royle, Ill. Him. Botany; Birdwood's Bombay Products; Hogg's Vegetable Kingdom; Gamble's Manual; Von Mueller's Select Plants.*

PALM-TREE WOODS is a commercial name in Britain given to the stems or trunks of palms from the East and West Indies, and imported to

PALM-TREE WOODS.

a small extent for fancy use. The palms furnish black, brown, prickly brown, and speckled woods, principally from the *Areca catechu*, *Borassus flabelliformis*, species of *Calamus*, *Cocos nucifera*, and species of *Corypha*, which are largely used in India. In structure, the wood of the palms appears formed of a series of hard, stiff, longitudinal fibres not interlaced or twisted, but crossed at considerable intervals at various angles by similar fibres. The palm woods are sparingly employed in England for cabinet and marquetry work; sometimes for billiard cues, which are considered to stand remarkably well, and they are also turned into snuff-boxes, etc. The smaller kinds are imported under the names of partridge canes (called also Chinese or fishing canes), Penang canes, from the island of that name, together with some other small palms which are used for walking-sticks, the roots serving to form the knobs or handles. The knobs exhibit irregular dots, something like the scales of snakes; these arise from the small roots proceeding from the principal stem; which latter shows dotted fibres at each end of the stick, and streaks along the side of the same. Twisted palm sticks are the central stems or mid-ribs of the date-palm; they are twisted when green, and stretched with heavy weights until they are thoroughly dry. They are imported from the Neapolitan coast, but are considered to be produced in Egypt. The shells of the cocoanut and coquilla-nut, and the kernels of the areca or betel-nut, and those of the corosos or ivory-nut, have likewise their uses in British workshops. The varieties of the several hundred species imported into Great Britain from the East and West Indies are known there by the names, palm, palmetto, palmyra, nutmeg, leopard, and porcupine woods, etc., from their fancied resemblances; for when they are cut horizontally, they exhibit dots like the spice, and when obliquely, the markings assimilate to the quills of the porcupine. The trunks of the palms are invariably soft and spongy in the centre, but are gradually harder towards the outside. They do not possess the medullary rays of the proper woods, but only the vertical fibres, which are held together by a much softer substance, like pith or cement, so that the horizontal section is always dotted, by which they may be readily distinguished from all true woods. The colours and hardness of the two parts differ very materially. *Areca catechu*, the betel-nut palm, is remarkably straight; it grows to the height of about 30 feet, and rarely exceeds 4 or 5 in circumference. The general colour of its wood is a light yellow brown, the fibres are large, hard, and only a few shades darker than the cementitious portions. *Cocos nucifera*, the cocoanut palm, sometimes grows to 90 feet in height and 3 feet in diameter, but is generally less. The upper part of its trunk is soft and stringy, but the lower supplies a useful wood, the fibres of which are of chestnut brown, and several shades darker than the intermediate substance. The wood is employed for joists, troughs for water, and many purposes of general carpentry. The wood of *Caryota urens* is much darker than either of the preceding, the fibres are nearly black and quite straight, and the cement is of a dark brown; but in either varieties with these black fibres, the softer part is very light coloured, and so friable that it may be picked out with the fingers. Palmyra wood,

PALM WINE.

Borassus flabelliformis, is largely used in Ceylon and the Peninsula of India for the construction of roofs, the joists of which consist of two slabs, the third or fourth part of the tree, bolted together by their flat sides so as to constitute elliptical rafters. For flat roofs they are covered first with flat tiles, and then with a white concrete called chunam, consisting of shell-lime, yolks of eggs, and jagari (sugar), beaten together with water in which the husks of cocoanuts have been steeped.

The Picly pole, the *Cocos Guineensis* of Jamaica, etc., a palm growing 40 feet high, and of small diameter. Its wood is said to be very elastic, and fit for bows and rammers.—*Simmonds*; *Tredgold*. See Palmyra and Porcupine Wood.

PALM WINE, or toddy, is the fermented sap of several palms of the E. Indies,—*Arenga saccharifera*, *Borassus flabelliformis*, *Caryota urens*, *Cocos nucifera*, *Phoenix dactylifera*, *P. sylvestris*, and species of *Caryota*.

Palmyra wine.

Dom? Tafi, . . .	ARAB.	Pannang-kalloo, . .	TAM.
Tali, Tari, . . .	BENG.	Pattoo-toadi, . . .	"
Lontar,	MALAY.	Tati-kalloo, . . .	TEL.
Tal-gaha,	SINGH.		

Caryota urens.

Bherli,	MAHR.	Kittul,	SINGH.
		Cocoanut tree.	

Narjil,	ARAB.	Narikela,	SANSK.
Narikel,	BENG.	Tenga,	TAM.
Nareli,	HIND.	Ten-kaia,	TEL.
Nur-kalapa, . . .	MALAY.	Nari-kadam, . . .	"
Tenga,	MALEAL.	Kobbari kalloo, . .	"

Wild date-palm (*Phoenix sylvestris*).

Send'hi,	HIND.	Eetchum pannay, .	TAM.
Khajoori,	SANSK.	Eeto,	TEL.

Palm wine is mentioned in Exodus xxix. 40 and Numbers xxviii. 7, and its spirit seems to be the same as the strong drink of Isaiah v. 11 and xxiv. 9. The Hebrew name is Siker, the Sikers of the Greeks, from which seemingly comes the *Saccharum* of the Romans. According to Jerome, in Hebrew any intoxicating liquor was *Sikera*, whether obtained from grain, the juice of apples, honey, dates, or any other fruit.

When first drawn, palm wine is refreshing, but in a short time passes on to the vinous or acetous fermentation, and in these stages spirits are distilled, sugars are made, or vinegar obtained. In the languages of the E. Indies, the spirit is called arrack; it is the cha of the Chinese, the sagwire of the Philippines, the tuba of Manilla and Mindoro, and the tuac of Timor and the Moluccas. The palm wines are obtained from the date trees by tapping or notching the trunk, and from the arenga, palmyra, cocoanut, caryota, by cutting the fruit-bearing spathe.

With the wild date tree, *Phoenix sylvestris*, in Bengal, the process of tapping and extracting the juice commences about the 1st of November and terminates about the 15th of February. Some days previously, the lower leaves of the crown are stripped off all round, and a few extra leaves from the side of the tree intended to be tapped. On the part thus denuded, a triangular incision is made with a knife, about an inch deep, so as to penetrate through the cortex, and divide the sap vessels; each side of the triangle measures about 6 inches, with one point downwards, in which is inserted a piece of grooved bamboo, along which the sap trickles, and from thence drops into an

earthen pot suspended underneath it by a string. The pots are suspended in the evening, and removed very early the following morning, ere the sun has sufficient power to warm the juice, which would cause it immediately to ferment, and destroy its quality of crystallizing into sugar. The cutting being made in the afternoon, next morning the pot is found to contain, from a full-grown tree, 10 seers of juice, the second morning 4 seers, and the third morning 2 seers of juice; the quantity exuding afterwards is so small, that no pot is suspended for the next four days. Daily, at sunrise, throughout the gur or sugar-making season, the toddy-drawer may be seen climbing the trees, and collecting at a convenient spot beneath them, the earthen pots containing the juice yielded during the past night. Under a rude shed, covered with the leaves of the date tree itself, and erected under the shade of the plantation, is prepared the boiling apparatus to serve for the gur season. It consists of a hole of about 3 feet in diameter, sunk about 2 feet in the ground, over which are supported by mud arches four thin earthen pans of a semi-globular shape, and 18 inches in diameter; the hole itself is the furnace, and has two apertures on opposite sides for feeding in the fuel, and for escape of the smoke. The fire is lit as soon as the juice is collected, and poured into the four pans, which are kept constantly supplied with fresh juice as the water evaporates, until the whole produce of the morning is boiled down to the required density. As the contents of each pan become sufficiently boiled, they are ladled out into other earthen pots or jars of various sizes, from 5 to 20 seers of contents, according to local custom, and in these the boiled extract cools, crystallizes into a hard compound of granulated sugar and molasses, and is brought to market for sale as gur. By subsequent processes the gur is deprived more or less of its molasses and impurities.

The process of obtaining it from the spathes is as follows:—When the spathes, for instance, of the fruit-bearing palmyra trees appear, the toddy-drawer, climbing to the top of the tree, binds the spathes tightly with thongs to prevent their further expansion, and thoroughly bruises the embryo flowers within to facilitate the exit of the juice. For several succeeding mornings, this operation of crushing is repeated, and each day a thin slice is taken off the end of the racemes, to facilitate the exit of the sap and prevent it bursting the spathe. About the morning of the eighth day, the sap begins to exude, when the toddy-drawer again trims this truncated spathe, and inserts its extremity into an earthen pot to collect the juice. These vessels are emptied morning and evening, and the palmyra will continue for four or five months to pour forth its sap at the rate of three or four quarts a day; but once in every three years the operation is omitted, and the fruit is permitted to form, without which the natives assert that the tree would pine and die.

With the *Arenga saccharifera*, one of the spathes or shoots of fructification is beaten for three successive days with a small stick, with a view of determining the sap to the wounded part. The shoot is then cut off, and the liquor which pours out is received in pots of earthenware, in bamboo, or other vessels. This palm is fit to yield toddy at seven or eight years old, and continues

to yield it for two years at the average rate of three quarts a day. When newly dawn, the liquor is clear, and in taste resembles fresh must. In an hour or two it becomes turbid, whitish, and somewhat acrid, and quickly runs into the vinous fermentation, acquiring an intoxicating quality, and much of it is drunk in that state. A still larger quantity is immediately applied to the purpose of yielding sugar. With this view the liquor is boiled to a syrup, and cooled in small vessels, the form of which it takes; and in this shape it is sold in the markets. The sugar is of a dark colour and greasy consistence, with a peculiar flavour. It is the only sugar used by the native population of Java. The wine of the palm is also used in the preparation of arrack.—*Walton's State*, p. 116.

PALMYRA, also called Tadmor, a ruined city in the desert, to the S.E. of Jerusalem, three days' journey from the Euphrates. We read in 1 Kings ix. 18, and 2 Chronicles viii. 4, that Solomon built 'Tadmor in the wilderness;' and Josephus assures us that the city, which was subsequently known under the name of Palmyra by the Greeks and Romans, was one and the same place. It has again recovered its original appellation, being known to the wandering Arabs under that of Tadmor. The first mention of it in Roman history is under Mark Anthony (see Appian, *De Bello Civil.* lib. 5), at which time it appears the inhabitants were noted for their riches and their commerce with the eastern nations. Pliny described Palmyra as remarkable on account of its situation, the richness of its soil, and its agreeable streams. It is now encompassed on every side by a vast desert of sand, which completely separates it from the rest of the world. It always maintained its independence between the two great empires of Rome and Parthia, whose constant endeavour it was, during their wars, to bring it over to their respective interests. It is distant 337 miles from Seleucia on the Tigris, 203 to the nearest part of the coast, and 176 from Damascus. The entire ruins of Palmyra, when seen at a certain distance, are infinitely more striking than those of Balbek; but there is not any one spot so imposing as the interior view of the temple of Balbek. The temple of the sun at Tadmor is upon a grander scale than that of Balbek, but it is choked with Arab houses, which admit only a view of the building in detail. The architecture of Balbek is richer than that of Tadmor. From the time of Solomon till after the captivity of the Roman emperor Valerian by the Persians, but little is known of it. It rose to the highest opulence and splendour under Odenatus, whose dominions extended from the Euphrates to the Mediterranean. But its chief interest is connected with the wife of Odenatus, Zenobia, queen of the east. Her increasing power attracted the notice and jealousy of Aurelian, who, having defeated her in two pitched battles, laid siege to Palmyra. Soon after the surrender of the city, the Palmyrenes revolted against the emperor, who in consequence entirely destroyed the city, and put the greater part of the inhabitants to death, though he afterwards restored the temple of the sun, and gave permission to the remnants of the Palmyrenes to rebuild and inhabit their city. The temple of the sun consists of an immense court, of which the ruins are spread over a space of 220 yards. It is surrounded by a stately wall, adorned with pilasters within and without. Two rows of

marble columns, of which about sixty remain entire, formed a colonnade within the court, which is now occupied by the Arab huts. The great colonnade extends more than half a mile in length, and probably was the main street in the city, from which others branched out laterally; it was entered by an archway, and terminated by a large building, of which the portico alone remains. Innumerable columns and ruins of temples are scattered over the plain. Lord Lindsay says, 'An awful stillness—a lifelessness—pervades the ruins; they stand as lonely and silent as when the last of the Palmyrenes departed and left the city of Zenobia to silence and decay.'

Palmyra is a Sanskrit word corrupted, and affords the etymology of Solomon's city of the desert, Tadmor. The p, by the retrenchment of a single discritical point, becomes t; and the l and d being permutable, Pal becomes Tad or Tar or Tal, the palmyra, which is the mor or chief of trees; hence Tadmor from its date trees. In British India there are more than one 'city of palms' (Talpur); and the tribe last ruling in Hyderabad, on the Indus, was called Talpuri, from the place whence they originated. — *Robinson's Travels; Tod's Rajasthan*.

PALMYRAS POINT, a headland in Cuttack, in the N.W. side of Bay of Bengal, in lat. 20° 44' 40" N., and long. 87° 2' E. Vessels making for the Hoogly from the south endeavour to sight it.

PALMYRA TREE, *Borassus flabelliformis*.

Dom? Tañ,	ARAB.	Ampana,	MALEAL.
Tai-gach'h,	BENG.	Karimpana,	"
Pei-shu,	CHIN.	Tala,	SANSK.
Brab tree,	ENG.	Tal-gahu,	SINGH.
Tal, Tar,	HIND.	Panna maram,	TAM.
Lontar,	MALAY.	Tatti chettu,	TEL.

This tree is very abundant, especially in all the sandy tracts near the sea. It is to be seen in almost all parts of India, and occasionally as far as lat. 30° N. It is, next to *Caryota urens*, the largest palm in the Peninsula, and it seems to thrive equally well in all soils and situations. The palmyra forests of Tinnevely form a distinctive feature in the scenery of the province; it extends along the Malabar coast, and is almost the only tree seen in the flatter alluvium near the sea at Gujerat. It is common on the islands of the Indian Archipelago. After the cocoanut tree, this is the most useful of the palms. The fruit and the fusiform roots of the young trees are used in the Northern Circars as articles of food by the poorer classes. The leaves are used for thatching and coarse fibre. Toddy is extracted from the sap of the tree, and is extensively used in the manufacture of sugar in Vizianagram and Rajamundry. Very neat baskets of palmyra leaf are manufactured at Tinnevely. The seeds when young are eaten by the natives, being jelly-like and palatable. The Poonattoo of the Singhalese is the pulp of the fruit dried in the sun, then smoked in their houses, and eaten as cakes, for soup, or in curry; its young root is as edible and nutritious as a carrot; from its leaves are manufactured mats, fans, beautiful basket-work of every description, sandals, hats, umbrellas, sieves, thatch, water buckets, and the most lasting substitute for paper used by the natives, and are largely used for writing upon with an iron style. The sap is a pleasant nutritious drink, and from it is produced an excellent sugar, and superior sugar-candy. The

fruit when roasted is a wholesome food, and in hot weather the pulp is a most grateful refreshment. The timber of the trunk supplies the natives with a durable wood for building purposes, the refuse of the leaves is their ordinary firing, and the huge root of the old tree, when covered with a sheep-skin, forms an excellent drum. The dried prepared leaves are also employed for thatching houses, for making small baskets, mats, etc., and some also are formed into large fans. The fibres of the leaf-stalk are employed on the Madras side for making twine and small rope. They are about two feet in length, strong, wiry, and not unlike those of the esparto of Spain. The wood, near the circumference of old trees, is very hard, black, heavy, and durable. Its wood is used chiefly for rafters, joists, and reapers; when of good age, the timber is very valuable for this purpose; the timber is split into four for rafters, into eight for reapers,—these are dressed with an adze. Those of the Jaffna palmyras are famous, and were largely imported into the Peninsula in former times. From the structure of the fibres, it splits easily in the direction of its length, but supports a greater cross strain than any other wood; iron nails, however, rust rapidly in it. As a fancy wood it is known in Europe as porcupine wood and as nutmeg wood. Near the base of the leaves is a fine down, which is used for straining liquids through, and also for stopping bleeding from wounds. The tree, during the first part of the season, yields a pretty large quantity of toddy or palm wine. This is either drunk fresh drawn from the tree, or boiled down into a coarse kind of syrup called jagari, or it is fermented for distillation. One-fourth of the population of the northern provinces of Ceylon are supported by the produce of this tree. In Tinnevely thousands subsist on the products of this palm; a considerable portion of the revenue of the province is derived from the tax upon it, and no small portion of the time of the magistrates is wasted upon the quarrels and disputes of which it is a most fruitful source. There are about five millions of palmyras bearing tax, and the sum thus realized by Government grants is one lakh and a half of rupees, or about one rupee per thirty trees. Proprietorship in palmyras consists of four classes, viz. 1. The ryot who is owner of the trees and the lands upon which they grow; 2. The palmyra-climber who holds a puttah for trees growing on the land of another; 3. The climber who holds a puttah for trees growing on land belonging to Government, lying waste, but capable of being cultivated; and 4. Climbers who hold puttahs for trees on land belonging to Government, but which cannot be cultivated, such as road-sides, etc. From this diverse proprietorship, from the manner in which the tax is assessed, oftentimes being in excess of the land tax, and from the practice of inspecting and assessing the tax once in three years, the proprietors are subjected to considerable inconvenience, and the collector and his assistants to very much labour. Palmyra leaf fibres are obtained by bruising and beating the leaf-stalks, which are then dried in the sun for a couple of days, when they are taken up, the fibres separated by the fingers, and gently scraped with a knife to remove any pulp adhering to the fibres. — *Tennant's Ceylon, M.E.J.R.; Royle's Fib. Plants*, p. 39; *Mason*.

PALNAUD, the N.W. corner of the Guntur collectorate, grows cotton.

PALNI, commonly written Pulney; also called Varahagiri, Vadagiri, and Kannandenan, is an isolated mountain range in the Madura district of the Madras Presidency, between lat. 10° and $10^{\circ} 15'$ N., and long. $77^{\circ} 20'$ and $77^{\circ} 55'$ E. It extends in a north-easterly direction from the Western Ghats, with which they are connected by a ridge of hills about 8 miles in width. The range is divided into two groups, the higher and lower, or the west and east ranges. The mean elevation of the former is about 7000 feet, of the latter from 3000 to 4000 feet. The total population of the hills is about 13,200 souls,—4800 on the higher ranges, and 8400 on the lower. The inhabitants are the Puliya race.—*Imp. Gaz.*

PALO. HIND. The starchy extract of root and stem of *Tinospora cordifolia*, *Miers*, the stem of which is macerated, and the solution evaporated to dryness.—*Simmonds' Dict.*

PALODHERI. The Pol-u Sha of Hiwen Thsang has been identified with Palodheri, or the village of Pali, which is situated on a dheri, or 'mound of ruins,' the remains of some early town.—*Cunningham's India*, p. 51.

PALOGPONG IKAN, or Ari-ari-ikan of the Malay, Loo-pa of the Chinese, is isinglass. Since the Chinese settled in the Straits, they collect fish-maws at Penang, Malacca, and Singapore, also from Bombay, Ceylon, Madras, Bengal, Tenasserim, and most of the Malayan islands, and export to China.—*Jour. As. Soc. of Bengal*, p. 445.

PALOLO, the name given to Balti by the Dard race. See Balti; Bolor; India.

PALOLO VIRIDIS. *Gray*. A small seaworm, one of the Annelides, occurs in some parts of Samoa (the Navigator Islands), in the South Pacific. They appear for two days monthly, the day before and the day on which the moon is in her last quarter. They resemble a very fine straw, and are largely eaten.

PALONG. The Pa-long, Po-loa, Pa-on, or Za-baing tribe are partially subject to, and located to the east of, the Mo-Meit (Mung Myit, Moung-m-ri) beyond the Ka-ren-ni, and along the Chinese frontier, as far as the latitude of Bamo (Mangmo). They are civilised and remarkably industrious, being good carpenters, dyers, and blacksmiths. Their dha or swords are exclusively used in and around Bamo. Between Yunnan and Burma, by Bamo, the route passes across a range of hills inhabited by Ka-khyeng and Palong, and then enters a Shan country, the Ko-pyi-doung of the Burmans. The Palong inhabit the valley south-east of Bamo, beyond the first mountain range. They approximate to the Shan, of whom they are probably an offshoot; they wear the same dress, and are Buddhist, but they have affinities with the Ka-khyeng. They seem to resemble the Annamese in some respects. A race of the same name (Panong), but to which the Siamese apply the generic name of Ka or Kha, inhabit the mountains of Laos, bordering on Kambojia. They are a coarse and debased variety of the Annam and the Kambojian type. The Palong tribe have Shan and Ka-khyeng on the north, with Burmans on the south, between lat. 97° and 98° N., and in long. $23\frac{1}{2}^{\circ}$ N. The Palong tribe are kindred to the Shan, and inhabit the hills east and north-east of the ruby mines, on the border of Burma and

China. They are short athletic men, with fair skins; many of them have large grey eyes, and all have a small flat nose, much distended towards the nostrils. They wear a dark jacket and short breeches in the Shan style.—*Yule*, p. 169.

PALOO, SINGH, *Mimusops hexandra*, *Roxb.*, has a hard, fine, close-grained, heavy Ceylon wood; heart-wood deep red-brown; recent layers reddish-yellow; its compact, even structure, admirably adapt it for turning wood.—*Lth.* 1851.

PALSAMUDRAM, in lat. $13^{\circ} 57'$ N., and long. $77^{\circ} 41'$ E., in Mysore, 4 miles west of the Chitore. The dak bungalow is 2279 feet above the sea.

PALUDINIDÆ, a family of prosobranchiate gastropodous mollusca, inhabitants of fresh water. The genera included in it are paludina, valvata, ampullaria, amphibola, and bithinia. The genus *Paludina*, *Lam.*, is found in Europe, Asia, Africa, and America. The number of recent species of *Paludina* given by Woodward is 60, and of fossil species 50.

PALUMBUS ELPHINSTONEI, *P. torquatus*, *P. pulchricollis*, *P. Torringtonii*, of British India and Ceylon, are wood-pigeons.

PALUNG. BENG. *Beta Bengalensis*, native variety of beet-root cultivated for food.

PALWAH, a fish of Sind, called Pullah or Pullar in Bombay, and Hilsa of Bengal; in the Bombay market it is only eaten by natives, and its name is written Palo.

PALWAR. HIND. A boat on the Hoogly and Ganges, of 15 to 20 tons burden, employed for goods traffic.

PAMBAM, written also Paumben, a small town in the extreme south of the Peninsula of India, giving its name to the passage between the island of Rameswaram and the mainland, in Madura district, Madras; situated in lat. $9^{\circ} 17' 20''$ N., and long. $79^{\circ} 15' 31''$ E., at the western extremity of the island commanding the channel.

PAMBAN MANCHE. TAM. Snake-boat of Cochin. See Boat.

PAMBOO KALOO. TAM. Literally snake-stone. In Ceylon, a substance used by the people to apply to a snake-bite to extract the poison. It was examined by Faraday, who declared it to be a piece of charred bone which has been filled with blood, perhaps several times, and then carefully charred again.

PAMBU PRANDU. TAM. *Circæus gallicus*, *Gmel.* It is the common serpent-eagle of India. It generally circles in the air, but often flying along the ground like a barrier; its chief food is snakes and lizards.

PAMIDI PATTI. TEL. *Gossypium*, *sp.* Pamidi means valuable. Pamidi tangedu, TEL., *Poinciana pulcherrima*, *L.*

PAMIR, the Upa Meru of the Vedic Aryans, which Europeans have changed to Bam-i-Danyar, or the roof of the world. Lieutenant Wood, of the Indian navy, early in the 19th century encamped on its summit, and traced the Oxus to its source. The ascent from Yarkand and Kashgar, westward to the table-land of Pamir, is almost imperceptible; and when that lofty position is gained, where the average elevation is probably as much as 15,000 feet above the sea, a vast open plain is seen, which stretches from the valley of the Jaxartes in one direction, across the head-streams of the Oxus, to the top of the Kashgar or Chitral valley in another. This plateau may be 700 or 800 miles in extent.

Pamir is a very mountainous country: the peak of Kaufmann is 22,580 feet; Mount Gurunda, from which many of the rivers of Central Asia flow, is 20,900 feet; Mount Mustag, 25,800 feet. The summits of all these are covered with eternal snow, the limit whereof on the northern slope is at 14,000 feet high; on the southern, at 19,000 feet. The valleys of the Pamir are barren, only a few of them being covered with fertile meadows. From this plateau, the Oxus, Jaxartes, rivers of Yarkand and Kashgar, and the Gilghit branch of the Indus, derive their head-waters. The Pamir, to the height of some 12,000 feet, has no steppe region. There are valleys along the rivers up to a height of 14,000 feet, but the widest is only 20 versts. This peculiar feature the Pamir has in common with the Tian Shan and Tibet, where similar valleys of narrow width at considerable heights are found. Real lofty plateaux are not to be found on the Pamir. The mountains rise in lofty ridges to 6000 feet and 7000 feet above the valleys. The absolute height of the mountains of the Pamir reaches often to 19,000 feet, and three groups of great altitude reach as high as 25,000 feet. It is studded throughout with lakes, and from it descend four great river systems. The Naryn, which is the main stream of the Jaxartes, runs through a long, luxuriant valley, between the culminating ridge and outer range of the Tian Shan, and drains all the northern face of the plateau. The Oxus, rising in the Sari Kul or Yellow Lake of Pamir, at least 300 miles to the south of the Jaxartes, receives from its right bank a multitude of small streams, which run to the south through rugged valleys, on the south-western face of the Pamir uplands. The western face of Pamir, between the Jaxartes and the Oxus, is far more precipitous than the eastern. Ridges run out as far as Samarcand and Karshi, and the streams from the upland which twine amongst these ridges form the Zar-afshan and Karshi part of the water system of the Oxus, though before they reach that river they are entirely consumed in irrigation.

Pamir Kul, in lat. 37° 14' N., and long. 74° 18' E., also called Burkut Yasin, a small lake, 13,300 above the sea, close to the crest of the Pamir steppe, and 102 miles east from Panja in Wakhan. From its western end flows the more southern of the two known branches of the Oxus. In summer, the neighbourhood is infested by Kirghiz and Kunjuti robbers.

Peschel rejects the view that these highlands were the primitive homes of the Indo-Europeans. He regards Bactria and Turkestan as likely to find more favour with students of the Indian and Iranian tongues. But he considers that it lay eastward of Nestus, now Kara-su, occupying both slopes of the Caucasus and the gorge of Dariel.

PAN, a race of the Kandh country, procurers for the Meriah sacrifices, numerous in Boad. In the Chutia Nagpur tributary states this class are regarded both by Hindus and aborigines as vile. The Kandhs associate with them on a more equal footing, allowing them to hold lands and to share in the village festivals. They also ply their trade as weavers, and the poorest of them work as farm labourers, cultivating land belonging to Kandhs, and making over to their landlords half the produce as rent.—*Dalton, Ethnol. of Bengal*, p. 299.

PAN. HIND. Betel-leaf, Piper betle, used as a

masticatory, which takes the place of opium and tobacco in many Asiatic countries. Slices of the areca nut are wrapped in the fresh leaves of the betel-pepper vine, with a small quantity of quick-lime. This masticatory has a herbaceous and aromatic but astringent taste. Some of all classes, male and female, chew it, and allege that it strengthens the stomach, sweetens the breath, and preserves the teeth. It gives the lips, tongue, and teeth a reddish tinge. The Piper betle is cultivated in spots by itself; it requires much water and care.—*Simmonds' Dict.*; *Riddell*.

PAN or Pun. HIND. An ancient Indian currency, the fifth part of an anna. A sum of 80 cowry shells; also a land measure of 3½ cubits. It is the source of the Anglo-Indian coin, Panam, and seems to be derived from the Sanskrit Pana, money in general.—*Wilson*.

PAN and Pat are Sanskrit names for a leaf; and hence Panna, a leaf or sheet or paper, and Patera, a plate of metal or sacrificial cup, because these vessels were first made of leaves. There is a coincidence between the Sanskrit and Tuscan Panna. The Madonna Impannata, by Raphael, in the Pitti palace at Florence, is so called from the subdued light admitted through the window, the panes of which are of paper.—*Tod's Rajasthan*, i. p. 661.

PANA. URIYA. A wild predatory tribe, on the south borders of Orissa.

PANAK. HIND. A painted stick for extending a web during weaving.

PANALA. This, with its sister fort of Pawunggarh, stands on a ridge about 12 miles to the N.W. of Kolhapur, forming part of a range of hills that runs nearly due east from the ghata. Its elevation above the plain of Kolhapur is 975 feet, and above the level of the sea at 2772 feet. In the Buddhist period, Panala and the neighbouring hills seem to have been favourite seats for recluses.

PANAMPARANAR, one of the twelve disciples of Agastya, so called from the town where he lived. A treatise on grammar, Panamparanar Sutrām, and the preface to the Tolkappiyam, are attributed to him.

PANAX, a genus of the ivy tribe of plants, of the natural order Hederaceæ, viz.—

Aculeata, Ait., China.
Arboreum, N. Zealand.
Cochleata, D.C., Java.
Digitatum, R., Sylhet.
Fragrans, R., Khassya.

Fruticosum, L., Java.
Longissomum, N. Zealand.
Palmatum, R., Chittagong.
Quinquefolium, China?

The species of Panax are herbs, shrubs, and trees, having the leaves and inflorescence variable. The plants of this family are not possessed of very decided medical properties, though the roots of all are said to possess medicinal qualities, and are much esteemed by the Chinese for their beneficial influence on the nerves.

Panax fragrans, Roxb., Gooti - soona, HIND., a shrub, with fragrant flowers of a green colour, a native of Nepal.

Panax fruticosum, Linn., is used in China and Cochin - China as a febrifuge, and as an astringent tonic. It has a shrubby, unarmed stem. It is a native of the Moluccas, the islands of Ternate, Java, and Amboyna, and is commonly grown in Indian gardens, and easily propagated from cuttings.

Panax pseudo - ginseng. Dr. Wallich has

discovered this species in Nepal; it is closely allied to *P. quinquefolius*.

Panax quinquefolium.

Aureliana Canadensis. | Ginseng, . . . CHIN.

This plant is about a foot high, with glabrous, straight, simple stalks, terminating in three leaves, each composed of six uneven leaflets, a little pedicelled, oval, lanceolate, acute, and toothed at the edge. The flowers are borne on a central peduncle, and disposed in an umbel. The berries are kidney-shaped, red, compressed, crowned with the calyx and stones, and containing two semicircular seeds. It is a well-known plant. The roots are about the thickness of the finger, like those of parsley, of a whitish-yellow colour externally, white within, two to three inches long, wrinkled, or with rings, often divided into two branches, rarely into three or four, and these presenting a slight likeness to the human form, whence the Chinese name is derived; the parenchyme is formed of a horny and compact tissue, displaying some resinous points. Above the neck is a knotty twisted tissue formed by the remains of the old stalks. The odour is sweet and weakly aromatic, the taste saccharine, somewhat like that of liquorice, subsequently bitter, and rather aromatic. The root of an umbelliferous plant, the *Sium nissi*, is often mixed in the druggists' shops, or mistaken otherwise for the ginseng; the essential difference consists in the ginseng having the neck covered with fibrous threads, the remnants of the cortical part of the stalk. The root abounds in gum and starch, and has a little resin and essential oil. The root, without any obvious cause, has attained the highest celebrity and esteem among Chinese for its alleged medicinal virtues. The Dutch brought it from Japan in 1640, but the Japanese themselves were indebted for it to China. The plant grows in the great forests of Tartary between lat. 39° and 47° N., but has also been found in abundance in Virginia and Canada, and the roots are now cheap in China. The Chinese name the root 'the pure spirit of the earth,' the 'recipe of immortality,' the 'queen of plants,' etc., and regard it as a panacea for all diseases. In A.D. 1709 the emperor of China commissioned 10,000 Tartars to go in quest of as much of this root as they could find; each one was to give two pounds of the best of it to the emperor, and to sell the rest for its own weight in fine silver. The roots enter into the composition of every Chinese medicine. It is reckoned a stimulant and restorative. By Europeans and Americans, however, it is looked upon as a mere succulent, similar in its qualities to liquorice.—*Eng. Cyc.*; *Royle's Ill. Him. Bot.*; *O'Sh. p. 373*; *Smith, Mat. Med.*; *Tr. Med. Soc. Cal.*; *Pl. As. Rar. ii. p. 30*; *Eng. Cyc.*; *Riddell*; *Voigt*.

PANCH, HIND., five; from the Sanskrit *Pancam*, *PANJ.*, PERSIAN; hence *Pani*, the hand; *Pente*, GR., *Quinque*, LAT., *Cinq.*, FR. *Panch* is a frequently occurring word in compounds.

Panch, five, is said to be the origin of *Punch*, who has himself, Judy, the dog, the devil, and the child; also of the drinking punch with its five ingredients,—spirits, water, sugar, the lemon, and spice, or, according to another account, spirits, tea, sugar, lemons, and water.

Pancha Ganga Ghat, the five rivers to which Hindu pilgrimages are made.

Panchayat or **Panchait**, a native court of arbitration, originally consisting of, as the name implies, five members, but which may consist of any number. The Panchayat of India is identical with the Hebrew and Roman custom of elders sitting at the gate, the *γερουσία* of the Greeks; in Ceylon, it is the *Gam-sabawa*.—*Tennant's Ceylon*.

Panchajanya or **Panchaganya**, the *Sanchasura* conch or shank shell trumpet of Krishna. It was formed from that of the sea-demon Panchajana.—*As. Res. iii. 399, viii. 301*.

Pancha karatta, the five great gods or lords, also the five faces of Siva.

Panchal, **Panchala**, or **Pancham bandam**, the five artisan castes of the Hindus, viz. :—

	Canarese.	Hindustani.
Goldsmith, . . .	Aksala.	Sonar.
Blacksmith, . . .	Kambara.	Lohar.
Coppersmith, . . .	Kantsagara.	Tambagar.
Stone-cutter, . . .	Kassigara.	Sangtrash.
Carpenter, . . .	Bargia.	Barhai.

	Mahratta.	Tamil.	Telugu.
Goldsmith, .	Sonar.	Tattan.	Acsal ura.
Blacksmith, .	Lohar.	Karuman.	Kamr uru.
Coppersmith, .	Tambatgar.	Kannan.	Kantear uru.
Stone-cutter, .	Goudi.	Kul-tachau.	Ksasi uru.
Carpenter, .	Sutar.	Tatchan.	Wad'l oru.

The Panchala wear the Brahmanical thread, and some of those amongst the Mahrattas and Tamils claim to be Brahmins.

Pancha-linga, he who has five linga, a name of Siva, probably from the five places celebrated for his symbol, viz. :—(1) *Conjeveram*, where there is the *Prithivi-linga*, or linga made of earth; (2) *Jambukeswara*, where the *Ab-linga* is said to exude water perpetually; (3) *Tirunamale*, where the *tejo-linga* sparkles with light; (4) *Kalahasti*, where there is the *Vayu-linga*, the lamp of which is said to be in constant vibration with the wind; and (5) *Chidambara*, where there is the *Akasa-linga* or ethereal linga, an imaginary linga worshipped without any material form of it being kept in the temple.

The Sankhya philosophy reckons five organs of sense and five organs of actions; also five elements produced from the five subtle particles, ether, air, fire, water, and earth.

Pancha-gavya or **Pancha-kavya**, the five products of the cow,—cow-dung, urine, curds, milk, and ghi, sacred to the Hindu.

Pancharatna, five precious articles, gold, silver, pearls, crystal, and the emerald.

Pancha—? The five sweet juices, curds, milk, ghi, sugar, and honey.

Pancha—? The twigs of five trees, *Ficus Indica*, *F. religiosa*, *F. glomerata*, *Mangifera Indica*, and *Mimusops elengi*.

Pancha—? The five astringent juices from macerating in water the barks of *Eugenia jambolana*, *Bombax heptaphyllum*, *Sida rhomboides*, *Zizyphus jujuba*, and *Sesbania grandiflora*.

Panchanga, **SANSK.**, a form of salutation with Hindus. An almanac; a calendar.

Pancham, **HIND.**, the dominant fifth in the musical scale.

Panchama, the fifth lunar day of the bright or dark half of each month.

Pancha-maha-patika, in Hinduism, the five

heinous sins, viz. killing a Brahman, stealing gold, drinking spirits, intercourse with the wife of a spiritual preceptor, and association with a person who has committed these sins.

Pancha-maha-sabda, the martial drum, one of the insignia of royalty of the Chalukya dynasty when ruling at Kalyan.

Panchamarah, Mahomed and his four confidential associates.—*As. Res.* ix. p. 143, x. p. 96.

Panchakki of Nepal, a water-wheel, a water-mill on the bank of a river.

Pancha Shegam, a Hindu ceremony, which consists of pouring milk on the lingam. It is afterwards very carefully preserved, and some drops of it are given in the Panch Shegam office to dying people, that they may merit the delights of their heaven.

Pancham Bandham, five servile tribes in Karnataka, of whom are the Pareya, Bulwan, Chakili, and Toty.

Panch Mukhi, five-faced, a name of Mahadeva.

Pancha Vaddium, five musical instruments of Malabar, viz., Jenta, Chengalam, Ilatalom, etc., sounded three times daily, before Hindu princes.

Pancha-Vriksha, the five trees of Swarga, the heaven of Indra. Their names were Hari-Chandana, Kalpa Vriksha, Mandara, Parijataka, and Santana.

Panch-Chulia, five fireplaces, the kitchen of the goddess Nanda, in a mountain in Kamaon; its two east peaks are 22,673 and 21,114 feet above the sea.

Panch Dravid and Panch Gaur are usually taken to indicate the Hindu arrangement of the Dravida and Gaur tongues, also the Dravida and Gaur Brahmins. The pandits named the five Dravida tongues, the Telinga, Kanatika, Mahrati, Gurjara, and Dravida or Tamil proper; but at present Dr. Caldwell displaces the Gurjara or Gujerati and the Mahrati, and considers the Dravida proper or Tamil, the Telinga, and the Karnataka (Kannada or Canarese) to be the three principal languages of the Dravidian family; and he adds thereto the Malealam, the Tulu, and the uncultivated Toda, Kota, Gond, and Ku, making altogether nine Dravidian or Tamilian tongues. The five Gaur Brahmins are Kanya-Kubhya, Gaur, Saraswat, Maithal, and Ut-Kala.

Panch-patta, HIND., a striped silk of Ahmadabad.

Panch-Pira also Panch-tan, a place in Ulwar or Mewat, consecrated to five Muhammadan saints.

Panchrangi of Dharwar has a warp of silk and web of cotton; worn ordinarily by dancing women, not considered fit for respectable women.

PANCHALA, the country north and west of Dehli between the foot of the Himalaya and the Chambal. It was in the dominion of a race who were ruling in India at the time of the Kuru and Pandava strife. Their sway extended through the whole Southern Doab beyond Benares, as far as the river Karmanvati, which was for a time considered the frontier line of the two tribes. Canyacubya, the modern Canouj, appears in early times to have been called Panchala. It seems to have been a long but narrow territory, extending on the east to Nepal (which it included), and on the west along the Chambal and Banas as far as Ajmir. Little else is known of its early history, except through the Rajput writings and traditions collected by Colonel Tod, and the inscriptions

examined by Professor Wilson, with those translated and discussed by Principal Mill. The former relate that it was taken from another Hiudu dynasty, A.D. 470, by the Rahtor Rajputs, who retained it until its conquest by the Muhammadans in A.D. 1193, when they withdrew to their present seats in Marwar. The identity of Canouj and Panchala is assumed in Menu 11, 19. Its limits, as assigned in the Mahabharata are made out by connecting notes in the Oriental Magazine, iii. 135, iv. 142. These boundaries, enlarged a little on the south and on the west, are the same as those assigned by Colonel Tod to the same kingdom at the time of the Muhammadan invasion. According to the Mahabharata, the great kingdom of Panchala extended from the Himalaya mountains to the Chambal river. The capital of North Panchala, or Rohilkhand, was Ahi-Chhatra, and that of South Panchala, in the Oriental Gangetic Doab, was Kampilya, now Kampil, on the old Ganges between Budaon and Farkhabad. Just before the great war, or about 1430 B.C., the king of Panchala, named Drupada, was conquered by Drona, the preceptor of the five Pandu. Drona retained North Panchala for himself, but restored the southern half of the kingdom to Drupada. According to this account, the name of Ahi-Chhatra, and consequently also the Buddhist legend of Adi-Raja and the serpent, are many centuries anterior to the rise of Buddhism. It would appear, however, that the Buddhists must have adopted and altered the legend to do honour to their great teacher, for Hiwen Thsang records that outside the town there was a Naga-brada or 'serpent tank' near which Buddha had preached the law for seven days in favour of the serpent king, and that the spot was marked by a sthupa of king Asoka. In A.D. 1870, the only existing sthupa at this place was called Chattr, and General Cunningham infers that the Buddhist legend represented the Naga king after his conversion as forming a canopy over Buddha with his expanded hood. He thinks also that the sthupa erected on the spot where conversion took place would naturally have been called Ahi-Chhatra, or the 'serpent canopy.' A similar story is told at Buddha Gaya of the Naga king Muchalinda, who with his expanded hood sheltered Buddha from the shower of rain produced by the malignant demon Mara. The great mound of ruins called Atranji-Khera is situated on the right or west bank of the Kali Nadi, four miles to the south of Karsana, and eight miles to the north of Egta, on the Grand Trunk Road. The Panchali-Kudu in Telugu is a native of Panchala.—*Bunsen*, iii. p. 554; *Elphinstone*, i. p. 402. *Cunningham's India*, p. 360; *As. Res.* viii. pp. 336-341.

PANCHAM, a Lingaet layman; also one of the eighty-four Gachchas of the Jains.—*As. Res.* xvii. p. 298.

PANCHAMI. See Naga; Serpent; Snake.

PANCHAMI RISHI, a Hindu festival, held about the beginning of September, and is supposed to be in honour of seven Rishi or sages, represented by the seven stars of Ursa major or the Pleiades.

PANCHANGA, a Hindu almanac. The Hindu almanacs are all so complicated, and so few persons are able to understand them, that in every Indian town astrological professors, called Joshi, Jotai, or Jotiaru, earn a livelihood by going in

the early morning from house to house to mention the circumstances by which the religious observances of the Hindus are to be guided. The Hindu year is solar or sidereal, but the religious life of the Hindu follows the lunar calendar. A very complicated method has been devised for keeping the two concurrent, and the result is the Hindu 'luni-solar' year, a mode of reckoning time which has no parallel in any age or in any country. The solar year begins with the entrance of the sun into the sign Aries, and is of the same length as that of Europe; but the Hindu allows for the precession of the equinoxes, so that his year is gradually getting a little behind the European year. The luni-solar year begins with the new moon which immediately precedes the commencement of the solar year. The lunar month consists of thirty tithi or lunar days, which vary slightly in length according to the varying motion of the moon. These lunar months and days have to be kept concurrent with solar time, and this is effected by intercalation and omission. The lunar months are named from the solar month in which the new moon falls; and when two new moons occur in one solar month, the name of that month is repeated in the luni-solar calendar. It happens, at long intervals, that there is no new moon in one of the solar months, and when this occurs the name of that month is expunged. The same principle applies to the days. When two tithi or lunar days end in one solar day, that day is repeated, and when it happens that no tithi ends in a solar day, that day is expunged. The intercalated months and days are known as *adhika*, excessive, and the expunged as *kshaya*, destroyed. Each lunar month is divided into two halves, or fortnights, that of the increasing moon called *sudi*, and the waning half called *badi*; and the days are numbered from one to fifteen.

It will be seen from this how indispensable an almanac is to a Hindu. In his public and private accounts, and in his usual daily occupations, a Hindu keeps to civil reckoning of time. In his religious ceremonies he must keep his attention to astronomical aspects, and in his festivities and other occupations, to the astrological aspects of the planets. In business matters a solar year and months are generally used, as in the era of *Salivahana* and others; but the *Samvat*, or era of *Vikramaditya*, which follows the luni-solar reckoning, is also extensively employed in the ordinary affairs of life. The almanac being thus a necessity, great numbers of almanacs are published in all the principal languages, varying of course in accuracy and completeness, but all showing a considerable amount of scientific knowledge. The Hindu almanac is everywhere called *Panchanga*, because it must exhibit five (*pancha*) distinct matters:—1. the tithi or lunar day; 2. the *vara* or solar day of the week; 3. the *nakshatra* or lunar asterism for each day; 4. the *yoga*, the conjunctions and transits of the planets, eclipses, etc.; 5. the *karanas* or subdivisions of the lunar day. These are essentials, and to them must be added the *sankranti* or entrance of the sun into the different signs of the zodiac. The corresponding dates of different eras current in the country are generally given,—the Christian era, the Muhammadan era of the Hijra, and the Persian era of *Yezdejird*. The table for each fortnight must show also the exact time of the rise, culmination, and setting of the

sun, and the position of the moon and the planets, and may give illustrative diagrams. The amount of the accumulated precession of the equinoxes at the beginning of the year is assumed to be $18^{\circ} 11' 10''$, and the annual variation $50' 2''$. There is also in the *Panchanga almanac* a table of latitudes and longitudes of important places in India, the approximate declination of the sun for each day of the year, and the ascensional difference. The various eclipses are carefully described, and many have diagrams exhibiting the phases as visible. There are lists of the names of the *nakshatras*, the tithi, the *yogas*, and the *karanas*, the signs of the zodiac, the days of the week, and the six seasons of the year, etc.

The ceremonial calendar of fasts and festivals is an important matter to every Hindu. Religious observances of greater or less importance are constantly occurring. These are entered against their respective dates in the calendar, and in some versions short accounts are given of the most important of them. Of New Year's Day, we are told that in the morning a Hindu rubs his body with scented oil, and then bathes with warm water. Flags are raised on poles by each family to represent the banner of Indra, king of the gods. The leaves of the bitter nim tree are eaten, which secures health to the body. The almanac for the New Year is worshipped, and its predictions for the year are heard from one versed in astronomy and astrology, who is remunerated handsomely. The Brahmins also receive liberal gifts from the people. Gifts or feasts to Brahmins are universal on all festivals, and it is impressed upon the celebrants that without these the observance is ineffectual. On the 3d *Vaisakha sudi* (24th April) 'earthen water-pots and fans are given to Brahmins for the coming summer season, that the *pitri* or manes of deceased ancestors may feel comfortable during this season in the heavens.' On the 15th *Jyaishta sudi*, 'women fast and go to worship at the foot of the Indian fig-tree to preserve them from widowhood.' On the last day of *Asarha badi*, all the lamps in the house are washed, cleaned, and placed in a row, and offerings of incense and flowers are made to them. Sweetmeats are prepared in honour of the lamps, and are eaten by the whole household.' The 5th *Srawan sudi* is held sacred to the serpent gods. 'Ceremonies are performed on this day to ensure against the bites of snakes.' On the last day of the same month, 'the 64 *Yogini*, or female attendants of the goddess *Durga*, are worshipped, particularly by women, with the hope of obtaining issue.' The 10th *Aswin sudi*, at the autumnal equinox, is the *Dasahra*, 'the victorious tenth, in honour of the victory of *Durga* over a monstrous demon. This is a great holiday, lasting ten days; but it is only the last of the ten days that is properly called *Dasahra*. The image of the goddess is worshipped with various observances throughout the ten days, and on the last day it is borne with ceremony and thrown into the water. The 13th of the *sudi* or light half of the same month is the *Dewali* or *Dipawali*, a great festival in honour of *Kali*, another form of the goddess *Durga*. This is the great 'feast of illumination, during which houses are cleaned, whitewashed, and illuminated.' Fireworks are displayed, and 'playing with dice is the chief recreation of the well-to-do people.' The *Makara-sankranti* is a solar festival, held in honour of the sun, on the day

of his entrance into Capricorn. The Holi, also, or spring festival, is held in Phalgun, the last month of the year, in honour of Krishna, but is essentially a spring festival. Many of its observances have reference to that season, and some of them find their counterparts in other regions of the world. This feast lasts fifteen days, and resembles the Roman Saturnalia or the modern Carnival. People throw red powder at each other, and females are saluted with very impure exclamations and jests. On the day of full moon a pile is lighted before every house and in parts of the city, and cakes and coconuts are offered. In Bengal, Madras, and other parts, swinging was a great feature in this festival, but it has been prohibited by the British Government.

A third portion of the almanac is the astrological, and by no means the least important in the eyes of the great mass of Hindus. Lucky and unlucky days and seasons, and the influence of the planets and astronomical phenomena, are to the Hindu settled articles of belief which are beyond question. No matter of importance can be entered upon without consulting the Brahmins, and the Brahmins consult the Panchanga. There is merit even in referring to the almanac; and those who on New Year's Day hear what are the celestial influences of the year, thrive well in this world, free from sickness, calamity, or poverty, and become possessed of stores of corn and treasure. From the tithi a man derives good and weal; from the days of the week, long life; from the nakshatras, liberation from sin; from the yoga, liberation from disease; from the karanas, success in a desired work. There is a table of auspicious days for the investiture of Brahmins with the sacred thread, and another table of auspicious days for marriages. Hindus must of course be aware that they often fail in obtaining the good things promised upon astrological authority, but none would venture to brave the dangers of unlucky days and inauspicious conjunctions. They may be disappointed by the past, but they cannot venture to challenge the future. Another table enables a person to calculate his luck for the year, by the sign of the zodiac the moon was in at his birth. Absurd as all these are, they are not set down at haphazard, but are the results of certain rules and calculations. The influence of the planets during a recent year was thus predicted:—'The sun will be king. The minister is Mars. The lord of the first harvest is Jupiter. The lord of the clouds is the moon. The lord of the waters is Saturn. The lord of the last harvest, Mercury. When the sun is king, there is destruction to corn, flowers, fruits, and roots; fear from robbers; no water; disagreements among the rulers of the world, and disease to the inhabitants. When Mars is prime minister, there will be scarcity of rain, destruction to corn, fear from fire and robbers, pain from diseases, and the rulers of the land will fight against each other.' Happily for the world, and happily also for astrology, there are countervailing influences. When Jupiter is lord of the first harvest, the indication is that there will be plenty of rain, corn, water, wealth, and fruit, and gladness among the people; and under the influence of the moon, the lord of the clouds, there will be plenty of corn, flowers, and fruits; the learned will be happy, and the rivers and wells will overflow with

water. Among the many other portents of the year, there is one which foretells success to robbers, impostors, and wicked people; another foretells victories to kings with small armies over those with large ones. One most desirable portent indicates moderation in all things, and another happiness to all mankind, and plenty of corn and fruit. Some of the portents are very incongruous and amusing in their association of things. One indicates destruction to potentates, asses, and earthen-pot makers; another bodes ill to black beetles, but happiness to the worshippers of Siva.

Such is the mixture of wisdom and folly presented by a Hindu almanac. The science which Hindus display in the preparation of their ephemeris is worthy of admiration, and the care they take in fixing the proper times for their religious festivals is deserving of all respect. Such things, in Great Britain, are not dead even now. Old Moore still flourishes; the Vox Stellarum, as declared by him, is yet listened to. Zadkiel is not yet defunct; and more than one low-class publication puts forth pretended astrological predictions. Even among educated people are to be found some who have faith in astrology. If astrology has been able to maintain a precarious stand against the overpowering attacks of western science, what expectation or hope can there be of its extinction in India? There it has for ages mingled with every man's daily and religious life, and will last as long as, and probably even survive, the religion with which it is associated.

PANCHA-TANTRA, literally five books; a famous collection of tales by Vishnu-Sarman, a Brahman, about the end of the 5th century of the Christian era, for the edification of King Dabishlim's sons. They were translated into Pehlavi, in the 6th century, in the time of Nushirwan; from that into Arabic by Abdallah bin Mokaffah about the middle of the 8th century; then into Persian by Rudaki, about the close of the 9th century, who received 80,000 dirhams for his labour. About the middle of the 12th century (A.D. 1150), in the time of Bahram Shah, a Persian prose translation was made; and a subsequent version was made by Kashifi, and named the Anwar-i-Suhaili. It is the basis of the Iyar-i-Danish in modern Persian, and the latter has appeared in Urdu as the Khard-Afroz. A Greek version was made by Simeon Seth at the command of Alexis Comnenes, and they appeared in Hebrew and Aramaic, Italian, Spanish, and German. The first English edition was in the 16th century, then in French in 1644 and 1709. A Latin version was made by order of John of Capua, from the Hebrew, in the 13th century, and from it translations were made into all the languages of modern Europe, until it became universally known as Pilpay's Fables. It has been translated into the Tamil, Canarese, and all the spoken languages of India. Pilpay is evidently derived from Bidpai, but in the original Sanskrit no name similar to this occurs. The Arabic translation is called Kalila-wa-Damna, the names of two jackals which take a conspicuous part in the first story, their names in the original Arabic being Karataka and Damanaka. The later Persian translation is called Anwar-i-Suhaili, or Lights of Canopus, and the Turkish rendering of it is the Humayun Nama. With the exception of the

Bible and the Pilgrim's Progress, there is probably no work that has been translated into so many languages as the Pancha-Tantra. There is great diversity in the manuscript copies of the Pancha-Tantra. In some versions the residence of the king is in Mahilaropya, a city of the south of India, which Professor Wilson identifies with St. Thomé. The Canarese and Sanskrit versions make it to be Pataliputra on the Ganges. Ward says it is the only original work on ethics in the Sanskrit language.—*Garrett; Ward.*

PANCHGHAR has ten small towns. It is celebrated for its groves of date trees; is occupied by the Gitchki tribe of Brahui, of peaceful and agricultural habits.

PANCH MAHAL, a British district on the eastern frontier of Gujerat, between lat. 22° 30' and 23° 10' N., and long. 73° 35' and 74° 10' E.; area, 1781 square miles; population in 1872, 240,743 souls,—89,624 being Koli, 68,710 Bhil, and 5966 Naikra. Naikra are the lowest and poorest, and until the middle of the 19th century were turbulent and unsettled. The Bhil and Koli are bad cultivators, thriftless, idle, and fond of strong drink. To check the thieving tendencies of Bhil and Koli, and to prevent any renewal of Naikra risings, the Panch Mahals are provided, in addition to the unarmed police, with a regiment called the Gujerat Bhil Corps, 530 strong. Of the 14,921 Musalman, 4461 are Ghanchi, generally oil-pressers, but formerly carriers of merchandise between Malwa and the coast.—*Imp. Gaz.*

PANCHWAI. BENG. A passage boat on the Lower Ganges.

PANDA or Punda, the proprietary or presiding priest of a Hindu temple of Siva, usually, though not invariably, a Brahman. The office is hereditary; and in some places, as at Benares, the panda officiates only on particular occasions, the duties of daily worship being performed by inferior priests or pujari in his employ. The term Panda is also applied to a priest who is stationary at any particular place or shrine. It is also described as properly applicable to a particular tribe, a branch of the Bharadwaja line (Gotra), one of the chief sections of the Canouj Brahmans, with such names as Bakhtawar Pandey. Up to the Mutiny, many of them entered the Indian army, and the word has been multiplied by the British, since the revolt of 1857-58-59, Pandey being applied to all the rebels, from the circumstance of the first one who was executed at Barrackpur being of the name of Mungul Pandey.

PANDAL. ANGLO-TAM. From Payal, TAM. An awning formed of grass, leaves, branches, or cloth; a platform, a canopy, a stage, a booth, a shed.

PANDANACEÆ. *Lindl.* An order of plants comprising 2 genera, 16 species, viz. 12 Pandanus, 4 Freycinetia: The Pandanaceæ or screw-pines abound in the Mauritius, Bourbon, India, the Straits, and Burma. The following species of the Pandanus genus are known in S.E. Asia:—

- P. amaryllifolius*, *Rozb.*, Amboyna.
- P. Andamanensis*, *Kurz.*, Andamans.
- P. caudelabrum*, *Pal.*, *Beauv.*, N. Guinea.
- P. caricus*, *Rumph.*, Moluccas.
- P. drupaceus*, *Pet. Th.*, Mauritius.
- P. edulis*, *Pet. Th.*, Madagascar.
- P. elegans*, *Pet. Th.*, Mascarennas.
- P. fascicularis*, *Lam.*, Moluccas.
- P. foetidus*, *Rozb.*, Bengal.

- P. furcatus*, *Rozb.*, Malabar, Chittagong, Pegu.
- P. graminifolius*, *Kurz.*, Burma.
- P. humilis*, *Rumph.*, Moluccas.
- P. leram*, *Jones*, Nicobar.
- P. laevis*, *Rumph.*, Burma.
- P. marginatus*, *Rozb.*, Mauritius.
- P. moscatius*, *Rumph.*, Amboyna.
- P. odoratissimus*, *L. fil.*, all S. Asia.
- P. utilis*, *Bory.*, Madagascar, Mauritius.

The name is derived from the Malay Pandang, and called screw-pine from their leaves, which resemble those of the pine-apple, and are inserted spirally along the stem. Species are found also in Mauritius, Bourbon, and Australia. The leaves are composed of tough, longitudinal fibres, white and glossy, which enable them to be employed for covering huts, making matting, as well as for cordage; and in the Mauritius, for making sacks for coffee, sugar, and grain. The species which is best known in India is *P. odoratissimus*, on account of the exquisite perfume of its flowers. This plant, as well as some of the other species in the Mauritius, are known by the name *Vacca* or *Baquois*, said to be *P. sativus*. On many of the Burmese boats, sails are made of the large narrow leaves sewed together of a species that has a trunk like a palm, and the fruit is used by the Karens to hackle their thread. The smaller and finer mats in common use are fabricated from the leaves of this species, which grows in Tenasserim above tide waters.

According to De Candolle, one species of pandanus, when opening in flowers, emits an electric spark, accompanied by a noise.

The fruit of a pandanus is an article of food among the natives of the north coast of Australia, where it is prepared by steeping in an embanked puddle. Dr. Leichhardt found the pandanus fruit in extensive use among the natives of the Gulf of Carpentaria, and was inclined to believe that they obtain a fermented liquor by this process of soaking. The practice is more probably adopted for the purpose of removing some deleterious substance, similar in its nature to the heart of the manioc. The fruit of the cycas palm is sliced up and dried in the sun with the same object.—(*G. W. Earl*, *Papuans*, p. 171; *Marius*, p. 121; *Jour. Agric. Soc. of India*, 1843, p. 92; *Royle*, *Fib. Pl.* p. 85; *Royle*, *III. Him. Bot.* p. 408; *Rozb. Fl. Ind.* iii. p. 741; *Mason*.)

PANDANUS FURCATUS. *Rozb.* Tha-bau, also Ta-gyet, also Thu-ta-kyet, *Burm.* Lowland screw-pine. The large coarse mats in universal use in Tenasserim are made from the leaf of a species of screw-pine that grows abundantly on the lowlands near tide waters. *Hi-sat shwa gye*, *Yæ ta kyet*, are other Burmese species.—*Mason*.

PANDANUS ODORATISSIMUS. *Linn.*

<i>Anthrodactylis spinosa</i> , <i>Forst.</i>	<i>Kildaro</i> , <i>Rhede.</i>
<i>P. sativa</i> , <i>Petit Thouars.</i>	<i>P. vacca</i> , <i>Henley.</i>
<i>Keder</i> , <i>Kadhi</i> , . . . ARAB.	<i>Wharra tree</i> , <i>OTAHITI.</i>
<i>Keori</i> , <i>Kea kaida</i> , . . . BENG.	<i>Gul-i-kivea</i> , . . . <i>PERA.</i>
<i>Hi-sat-ta-plu</i> , . . . BURM.	<i>Kayvodi</i> , . . .
<i>Screw-pine</i> , <i>Culdera bush.</i>	<i>Keteka</i> , . . . <i>SANSK.</i>
<i>Pandanus odoriferantia</i> , <i>Fl.</i>	<i>Woti-keytya</i> , . . . <i>SINGH.</i>
<i>Pandanus woihrleichi</i> , <i>GER.</i>	<i>Talam</i> , <i>Talay</i> , . . . <i>TAM.</i>
<i>Keora</i> , <i>Gaganphool</i> , <i>HIND.</i>	<i>Mogili (male)</i> , . . . <i>TEL.</i>
<i>Pandan</i> , <i>Pandang</i> , <i>MALAY.</i>	<i>Godangi mogali (fem.)</i> , . . .
<i>Thala</i> , <i>Kalda</i> , . . . <i>MALEAL.</i>	<i>Goujangi mogali</i> , . . .
<i>Leram</i> , . . . <i>NICOBARS.</i>	<i>Kotaki</i> , . . .

This grows along the coasts and in moist parts of all the Peninsula of India, and its leaves are

extensively manufactured into mats, baskets, and hats. The fibre of the leaf is white, soft, glossy, ill suited for cordage, but it has been found well adapted for the preparation of a good quality of paper, also for good sacking. Its fibrous aerial roots are much employed as paint brushes. The people of the Mulgrave Archipelago are said to use the juicy pulp and the pleasant kernels of the fruit. The wood is hard and durable; the flowers are used in garlands, and the red and yellow nuts as ornaments. All soils and situations seem to suit it equally well, and it flowers chiefly during the rainy season. It is much employed to make hedges, for which it answers well, but requires too much room. The lower yellow pulpy part of the drupes, and also the tender white base of the leaves, are eaten raw or boiled during scarcity.

The fusiform roots are composed of tough fibres, which basket-makers split and use to tie their work with; they are also so soft and spongy as to serve the natives for corks. In the Mauritius, its leaves are employed for package bags for the transport of coffee, sugar, and grain. As soon as gathered, the spines on their edges and dorsal nerve are stripped off, and the leaf divided into slips of the breadth proper for the use they are required for; this operation is performed with the blade of a common straight knife; they are then laid in the sun for a few hours to dry. When required for working into mats, the slips are passed under the blade of a knife, applied with moderate pressure, to remove all asperities on their surface, which gives them a polish, and makes them plain and more convenient to the hands. With the leaves, the natives of Southern India and the inhabitants of the Friendly Islands make a fine kind of sleeping mat, which they stain yellow and red with cassia leaves and Vatinga cottay. They are also used to make the common kind of umbrellas, called by the Tamils Talay elley kedri. The fine furnitures of Madras are packed in mats of these leaves. The natives of India are fond of the scent of the flower, which they place among their clothes. In the district of Ganjam, the flowers are said to be frequently tenanted by a small and very venomous snake. The male flowers are exceedingly fragrant, and great favourites with the Burmese. The flower is constantly referred to by the Sanskrit poets by the name Ketaki, and is the Keora and Ketgi of the Hindus. The Arabs call it Kazi, and Avicenna described it under the name of Armak. Oil impregnated with the odour of its male flowers, called Keore-ka-atr, costs two rupees the tola; and the distilled waters are highly esteemed both for their odour and their medicinal use as stimulants. This tree is often alluded to in the Hindu drama. In 'Malati and Madhava' the latter says,—

'Night, ever friend to love, now spreads its shade;
Faint in the east the gentle moonlight gleams,
Pale as the palm's sear leaf, and through the air
The slowly rising breezes spread around
The grateful fragrance of the ketaki.'

The Hindus use the flowers in all the ceremonies made in honour of Pulliar, Subramaniam, Mariamma, and Vishnu, but never in those of Siva.—*Eng. Cyc.*; *Graham's Cat. of Plants*, p. 227; *Chow-Chow*, p. 299; *Cal. Cat. Ex.*, 1862; *Mad. Ex. Jur. Rep.*; *Singapore Cat. Ex.*, 1862; *Sonnerat's Voyage*, p. 9; *Roxb.*; *Rohde, MSS.*; *M. E. of 1857*; *Ains.*; *Mason*.

PANDANUS UTILIS. *Borr.* The mats in which Mauritius sugar is imported are made of the leaves of *P. utilis*, *Borr.*

PANDARAM, a Saiva devotee; the officiating priest at the temples of Siva. This word seems to be Panduranga, or pale complexioned, from these individuals smearing themselves with ashes. Pam also means song. In the south of India they are Hindus of the Sudra section, worshippers of Siva, of whom many are professed mendicants, but many are learned men. These are not Vira Saiva, nor do they wear the lingam or adore Basava.—*Brown, Jangams*, p. 7.

PANDARPUR. A town of the Sholapur district, Bombay Presidency, situated in lat. 17° 40' 40" N., and long. 75° 22' 40" E., on the left bank of the Krishna, and 1378 feet above the sea. Pandarpur contains a celebrated temple, dedicated to the god Vithoba, regarded as an incarnation of Vishnu. In honour of this god, three fairs are annually held.

PANDHRI, a local tax levied on the non-agricultural classes, on shops, in the Madras presidency.

PANDION HALLÆTUS. *L.* The osprey.

<i>P. indicus, Hodge.</i>	<i>P. fluviatilis, Savi.</i>
Mach-moral, Bala, BENG.	Verali-addi-pong, . TAM.
Mach-manga, . . .	Kora-min-gedda, . TEL.
Pantiang, . . . LEPOH.	Hegguli . . of YERKALA.
Macha rang, . . . NEPAL.	

The osprey or fish-hawk is spread over all Europe, Asia, and Africa. It is common along all the large rivers of India, and at most of the large lakes and tanks even far inland. It plunges from a great height into the water, and can take up a fish of considerable size, but the *Haliæetus leucogaster* frequently robs it of its prey. A northern poet says,—

'Soon as the sun, great ruler of the year,
Bends to our northern climes his bright career,
And from the caves of ocean calls from sleep
The finny shoals and myriads of the deep;
When freezing tempests back to Greenland ride,
And day and night the equal hours divide;
True to the season, o'er our sea-beat shore,
The sailing osprey high is seen to soar,
With broad, unmoving wing; and circling slow,
Marks each loose straggler in the deep below;
Sweeps down like lightning! plunges, with a roar!
And bears his struggling victim to the shore.
The long housed fisherman beholds with joy
The well-known signals of his rough employ,
And as he bears his net and oars along,
Thus hails the welcome season with a song:—

'The osprey sails above the sound,
The geese are gone, the gulls are flying;
The herring shoals swarm thick around;
The nets are launched, the boats are plying:
Yo ho, my hearts! let's seek the deep,
Raise high the song, and cheerily wish her,
Still as the bending net we sweep,
"God bless the fish-hawk and the fisher!"

'She brings us fish, she brings us spring,
Good times, fair weather, warmth, and plenty;
Fine stores of chad, trout, herring, ling,
Sheepshead, and drum, and old wives dainty.
Yo ho, my hearts! etc.

'She rears her young on yonder tree,
She leaves her faithful mate to mind 'em;
Like us, for fish, she sails to sea,
And plunging, shows us where to find 'em.
Yo ho, my hearts! etc.'

PANDIT, a Brahman learned in the Sanskrit. It is to the Hindus what hakim is to the Muhammadans, but it is a term applied to all Kashmiri Hindus. They are mostly of the Brahman-

ical caste, wonderfully fair, and have no objection to flesh-eating. Numbers of them are now settled in India.—*Calcutta Review*.

PANDU. HIND. Artificial whitening, or plaster of paris.

PANDRAKARA, a race who rear silkworms.

PANDRETHAN, a temple in Kashmir, built between A.D. 913 and 921. It is supposed to have been a Vaishnava temple.

PANDU, from whom the Pandava princes of Hastinapur were named, was a descendant through Bharata from Puru, the great ancestor of one branch of the Chandravansha or Lunar race. A descendant of Bharata was king Santana, who married a widow named Satyawati, and two sons, Chitrāngada and Vichitra-virya, were born. Chitrāngada fell in battle, and Vichitra-virya succeeded to the throne, but he died without a son, leaving two widows, Amba and Ambalika, daughters of the king of Kasi; and Satyawati, who had had a son, Krishna Dwaipayana or Vyasa, by her former husband, called on him to raise up seed to his half-brother. The elder widow bore a son, blind Dhritrāshtra. The younger-widow bore Pandu; and a slave girl bore a third son, named Viduru; and because of Dhritrāshtra's blindness, Pandu came to the throne. Pandu had two wives, Kunti and Madri, with whom, however, he did not, as the legend says, consort; and he and his wives retired to the Himalaya, where he died. But Kunti had three sons, Yudishthra, Arjuna, and Bhima, begotten respectively by the deities Dharma, Yayu, and Indra; and the two sons of Madri, Nakula and Sahadeva, by the twin Aswini gods. These were the five Pandava.

On Pandu abdicating, his half-brother, the blind Dhritrāshtra, re-ascended the throne, and his sons took the title of Kaurava, from their ancestor Kuru. The Pandava lads and the Kaurava lads were brought up together at Dhritrāshtra's court, but they were constantly quarrelling, and their enmity reached a height on Dhritrāshtra passing by his own children and nominating Yudishthra to be his successor. For the sake of pence, the five Pandava retired to Varanavatu, and, being followed there by the active enmity of their cousin Duryōdhana, they escaped to the forest disguised as Brahmans.

Virat, the capital of Matsya, is celebrated in Hindu legends as the abode of the five Pandu during their exile of twelve years from Dilli or Indraprastha. The country was famous for the valour of its people, as Menu directs that the van of an army should be composed of 'men born in Kurukshetra near Indraprastha, in Matsya or Virata, in Panchala or Kanya Kubja, and in Surasena, of the district of Mathura.' The residence of Bhim Pandu is still shown on the top of a long, low rocky hill about one mile to the north of the town. The hill is formed of enormous blocks of coarse gritty quartz, which are much weather-worn and rounded on all the exposed sides; some of these blocks have a simple, straight face passing onwards, the result of a natural split, of which advantage has been taken to form small dwellings, by the addition of rough stone walls plastered with mud. Such is the Bhim-gupha or Bhim's cave, which is formed by rough walls added to the overhanging face of a huge rock about 60 feet in diameter and 15 feet in height.

Similar rooms, but of smaller size, are said to have been the dwellings of Bhim's brothers. They sought shelter in various countries near the Indus; and while at the court of king Drupdeva in Kampil-nagara of Panchalika kingdom, Arjuna's skill in archery carried off his daughter Draupadi, who became the bride of the five brothers. After being won by Arjuna at her Swayamvara or tournament, she was taken to the house of their mother Kunti, who desired the brothers to retain her as their wife. Between that time and the interval of her marriage, Draupadi performed the usual household duties; and ultimately, with Kunti and Draupadi in one car, and Yudishthra and his brothers in another, the family proceeded to the town of Kampila, where the marriage ceremony was performed. The five brothers had each a house and garden of his own, and Draupadi dwelt with each of them in turn for two days at a time; and it was agreed upon that another brother, under pain of being exiled for twelve years, should not enter where Draupadi was staying. But Arjuna broke the rule, and became exiled.

On the occasion of Krishna visiting his Pandava relatives at Hastinapur, accompanied by his wives and singing and playing women, Satyabhama, speaking with Draupadi, the polyandric wife of the Pandava, remarked to Draupadi, We, who are so many thousands in number, have all but one and the same husband in Krishna, and we are all happy with him: how comes it then that you have five husbands, and are not ashamed before men? To this Draupadi replied, You are every one jealous of each other, and are always talking of your suspicions one of another. But I never speak one word which all my five husbands may not hear alike, and which would give to either the smallest offence. Descended from the ancient sovereigns of the countries of Hindustan bordering upon the Jumna, thus called Panduon Raj, or the kingdom of the Pandu, in Hindu mythology, the five Pandu are regarded by the present Hindus as five demigods.

The strife between the cousins ultimately led to the destruction of the Kaurava in a great war, described in the Mahabharata.

These legends show customs of ancient India, some of which are still in force. As one of these still recognised, Menu, regarding the choice of a husband, enjoins parents to select a handsome son-in-law; and adds, 'Three years let a damsel wait, though she be marriageable, but after that term let her choose for herself a husband of equal rank.' But in the days of the Pandu, one mode of selecting a husband was the Swayamvara or self-choice, where a girl chose her own husband. In the Mahabharata, the cases are mentioned of Pandu with Pritha, Yudishthra with Devika, Sahadeva with Vijaya, Sivi and Devaki, Nala and Damayanti, Draupadi and Arjuna. Menu describes eight modes of marriage, viz. Brahma, Deva, Arsha, Prajāpatya, Asura, Gandharva, Rakshasa, and the eighth and worst, Paisacha; the first six for a Brahman, the four last for a warrior, and the same four, the Rakshasa excepted, for the third and fourth of the Hindu castes.

The practice of a relative raising children for a deceased childless relative is sanctioned by Menu, who says: 'On failure of issue by the husband, the desired offspring may be procreated either by his brother or some other near relative, called

Sapinda, on the wife, who had been duly authorized.' Pandu, also, when lamenting his childlessness, says to Pritha, 'In distress men desire a son from their oldest brother-in-law.'

The Gujar race, many of the Jat clans, and others in the north of India, still take to wife the widow of a deceased brother by the Karao ceremony. It is still a popular Hindu belief that the gods visit women. According to the legend, Kunti was the sister of a prince of Mathura, who was the father of Heri and Baldiva, the Indian Hercules (Hericula). Kunti, in consequence of the sins of the ancestors of herself and her husband, was doomed to experience the greatest curse that can befall a Hindu female, sterility. However, by a charm, she enticed the gods to her bed. Thus, says Colonel Tod, she had by Dharmaraja (Yama, or the Minos of the Greeks), Yudishthra; by Pavana (Eolus), Bhima; by Indra (Jupiter Coelus), Arjuna; and Madri had Nakula and Sahadeva by Aswini Kumara (the Hindu Esculapius, or the sons of Surya, the twins of the Hindu zodiac).—*Cunningham's Ancient Geog.*; *Garrett; Mahabharata in Wheeler's Hist. of India*, p. 228; *Westminster Review*, April 1868; *Tod's Rajasthan*, i. p. 31; *Cole's Myth. Hind.* p. 248.

PANDU-KURI or Pandu-kuli, the popular Tamil term applied to ancient cairns, tumuli, or tombs found all over S. India. Hindus know nothing of the race to which these remains belonged, and neither in Sanskrit literature nor in that of the Dravidian languages is there any tradition on the subject. Kuri means a pit or grave, and Pandu denotes anything connected with the Pandava brothers. To call anything a work of the Pandu is equivalent to terming it Cyclopean in Greece, a work of the Picts in Scotland, or a work of Nimrud in Asiatic Turkey, and means only that the structure to which the name is applied was erected in some remote age, by a people of whom nothing is now known. When the Tamil people are asked, By whom were these Pandu-kuri built and used? they sometimes reply, By the people who lived here long ago; sometimes that the people were a race of dwarfs only a span or a cubit high, but possessed of the strength of giants.

Near the village of Chavadi Paleiyam, in Coimbatore, one of them, opened in September 1807, contained a hoard of the flat silver coins—pieces found in all parts of India, and amongst them a silver denarius of Augustus. The cairns of Coimbatore are called Mandaver Kuli, which Dr. Shortt thinks is a dialectal change from Panda Kurzi, the ordinary Tamil name. In some opened in 1873 by Mr. Wedderburn were found an earthen jar containing human bones.—*David. Grammar*, pp. 326, 327.

PANDUNG-TOUNG-YO-THA, sons of the mountain range, a barbarous race in the interior, east of Ava.

PANDYA. MAHR. The writer or accountant of a village or district; an officer employed in the customs. In the Madras Presidency the term is sometimes applied to the headman of a district.—*Wilson*.

PANDYA, a kingdom in the south of the Peninsula of India, supposed to have been founded five or six centuries before the Christian era. Their first capitals seem to have been Kukhi near Ramnad, the Kolkhi of the Periplus, and Kalayana near Cape Comorin. Up to the rise of the

great Chola dynasty in the 10th and 11th centuries, the Pandya dynasty seems to have had a long career of prosperity and power. After that, for a while, they appear to have been subject to the Bellala dynasty of Mysore, but they had had several epochs of great brilliancy and power. Augustus, emperor of Rome, when at Antioch, received an embassy with letters from king Pandyon of ancient Dravira. The embassy gave valuable and curious presents, amongst others a man without arms, and a serpent ten cubits long. In the letter, the king described himself as holding sway over six hundred kings, and he asked the friendship of Augustus. In the embassy was an Indian named Zarmanochegus, from Baragosa or Broach, who accompanied Augustus to Athens, and there, as Calanus had done, committed self-immolation before the emperor. His tomb, known as the Indian's tomb, was to be seen as late as Plutarch's time. Their country, Pandya (Πανδία of Megasthenes), Pandi Mandala of the Periplus, Pandionis Mediterranea and Modura Regia Pandionis of Ptolemy, was one of three ancient divisions of the Dravida country of Southern India, the other two being Chola and Chera. And an early legend runs that the three kingdoms were founded by three brothers. Pandya kingdom seems to have been founded in the 5th century B.C. by Pandya, a person of the agricultural class.

Strabo mentions an ambassador from king Pandion to Augustus Caesar, and, from the Periplus and Ptolemy, Pandion seems to have been the hereditary appellation of the descendants of Pandya. Ptolemy notices Pandion, and the author of the Periplus of the Erythræan Sea mentions Comari (Comoric) and other places as under a king Pandion. At the time of the Periplus the principality extended to the Malabar coast, but in general the ghats formed the western limit of the kingdom, which occupied what are now the revenue districts of Madura and Tinnevely. The seat of government, after being twice changed, was fixed at Madura, where it was in the time of Ptolemy, and where it remained till the early part of the 18th century (A.D. 1736). Their wars and rivalries were with the adjoining kingdom of Chola, with which they seem, in the first centuries of the Christian era, to have formed a union which lasted some time. They, however, resumed their separate sovereignty, and were a considerable state until the 9th century, when they lost their consequence, and were often tributary, though sometimes quite independent, till it ended under the Naik dynasty, which was conquered by the Nawab of Arcot, A.D. 1736. A wall is said to mark the boundary between the Chola and Pandya kingdoms in Madura, remains of which have been traced near Ramagiri, the Cuddanaga of Coorg, etc. Professor Wilson supposes the appearance of Pandya as an organized state and the foundation of Madura to have happened B.C. 500. At the beginning of the Christian era, the Pandya dynasty seems to have held sway over the greater part of the southern portion of the Peninsula on the Coromandel coast, westward to Canara and Malabar, and southward to the sea. Adi Vira reigned about the year 1040. He was a literary prince, and some of his aphorisms are in common circulation in a small collection called Vetty Ver-kay. Pandya is still the general term used in

Travancore for the Madras revenue districts of Tinnevely and Madura. Chola with Tanjore, and Chera with Salem, known as Kerala, comprised the tract from Gokarna in N. Canara to Cape Comorin. The fish was the ensign of the Pandyan dynasty, who were thence called Minavar (Min, Там., a fish), and their standard Minkodi.

Two embassies were sent by the Pandyan king to Augustus, the first of which he received at Tarragona, the second is mentioned by Strabo. The friendship of the Romans was sought by only one other Hindu prince, O Kerobothros, the king of Chera or Kerala, who also was a Dravidian.

The Pandyan capitals were at Kurkhi (Korkoi), Kalyanapura, Kulasekara-pattanam, and Madura. The site of Kurkhi or Korkai is still a matter of dispute. It has been considered to be the Kolchi of the Periplus, identified by D'Anville with Kilakarai near Ranisseram, and by others with Korkai or Gorkai near the mouth of the Tamraparni.

The Chera was an ancient dynasty in the south of the Indian Peninsula, the rise and fall of which, as also the extent of their dominions, are only vaguely known. They seem to have risen on the fall of the Pandya sovereignty, and to have ruled over Travancore and Coimbatore, and parts of Salem. The Chera princes seem to have been first established at Scandapura on the Malabar coast, and subsequently at Talcad or Dalavanpura on the Cauvery and Mudugonda-patnam, perhaps the same as the modern village of Mudugondur on the road from Seringapatam to Kungial. The site of Scandapura is unknown. Talcad is described by Buchanan as a place of some extent, containing many buildings nearly covered with sand. The Carura regio Cerebothri, one of the earliest sites, has been supposed to indicate Carur in Coimbatore.

The ancient kingdom of Kerala on the Malabar coast was for some time subject to the Chera princes.

The several capitals of the Chola were at Conjeveram, Wori-ur, Combaconum, Gangondaram, and Tanjore. The whole history of this for some time the most important power of the Peninsula, is involved in great obscurity. There is no reliable information anterior to the 9th century, yet they must have been exercising sovereignty anterior to the time of Ptolemy, who makes mention of Arcati Soren; and, in the Mahawanso, there are frequent references to transactions with the Chola during the earliest periods of the Singhalese annals. The Tamil traditions also abound with stories of Adonda Chakravarti, who appears to have been a soldier of the prior Kurumbar tribes; but there are no trustworthy records forthcoming of his origin and actions, neither have there been obtained any authentic accounts of the overthrow and extinction of any of the great southern states.—*Mr. W. Elliot; Elphinstone's History of India*, p. 412.

PANEJITA. SANSK. A form of Hindu slavery. PANEKKAR, a title in Travancore.

PANEL. SIND. The leaves and stalks of the Pogostemon patchouli, *Lepellitier*, used as a perfume.—*Simmonds' Dict.*

PANE LOYE. TEL? URIYA. A fibrous plant, much employed by the Uriya fishermen in making their fishing baskets, and as lines for their nets;

also used for tying fences and making sieves. It is cheap, and when tarred and stretched, makes a good fence, and lasts for three or four years.

PA-NGAN. BURM. A compact white wood of Amherst, used for boats and oars, and for making musical instruments. It seems to be *Gmelina arborea*.—*Captain Dance*.

PANGLIMA GAJAH. MALAY. The first word means a governor or superintendent, and the other elephant. The office of superintendent of elephants at a Malay court was one of considerable dignity.—*Journ. Ind. Arch.*

PANGOIN, ant-eater; manis.

Badjar-kita, . . .	BENG.	Tarang-giling, . . .	MALAY.
Ling-li, . . .	CHIN.	Pang-giling, . . .	
Tanggilin, . . .	MALAY.	Arialer, . . .	TEL.

The pangolin of India, belonging to the order Edentata, gets its Indian name from its Malay designation. The genus is common to Africa and S.E. Asia, and in India is not rare, though, from their habit of appearing abroad after sunset, they are not often seen. *Manis Javanica* of Desmarest inhabits the Malayan Peninsula, Penang, Borneo, and Java. *M. pentadactyla*, Linn., is found in several parts of India. This species has been known ever since the expedition of Alexander the Great, and is mentioned by Ælian under the name *Φατταγν*.

Manis pentadactyla, Linn., *Blyth*.

Pholidotus Indicus, Gray.	<i>M. brachyura</i> , <i>Erzleb.</i>
<i>Manis crassicaudata</i> ,	<i>M. laticaudata</i> , <i>Illiger</i> .
Gray, Gr.	<i>M. inaurita</i> , <i>Hodgson</i> .
<i>M. Macroura</i> , <i>Desmarest</i> .	<i>Pangolinus typus</i> , <i>Less.</i>
Shalma, . . .	BAORI.
Keyot-mach, . . .	BENG.
Kat-pohu, . . .	
Ling-li, . . .	CHIN.
Ban-rohu, . . .	DUKHI.
Sillu, Sal, Salu, . . .	HIND.
Sukun-khor, . . .	
Armoi, . . .	KOL.
	Kaulimah, . . .
	Kowli-manjra, . . .
	Kasoli manjur, . . .
	Alangu, . . .
	Bajar-kit, SANSK., HIND.
	Bajra-kapta, . . .
	Alawa, . . .
	TEL.

Indian scaly ant-eater of all India.

Manis aurita, *Hodg.*, *Blyth*.

Pholidotus dalmanni, Gr.	<i>M. leucura</i> , <i>Hodg.</i>
<i>M. Javanica</i> , <i>Bly.</i>	<i>M. dalmanni</i> , <i>Saunders</i> .

The Sikkim scaly ant-eater is met with in Harpeh, Kiangan, and the southern Chinese provinces. It is dark coloured, more than 2 feet long, and covered on the back, limbs, tail, and every part of the body, except the belly, with moveable imbricated scales. The tail is long, and the tongue very mobile. It lives on flies, ants, etc., by catching them upon its outstretched tongue. Sometimes it lies down as if dead, and as the flies collect upon its body, it closes on them with its scales, and, entering the water, feasts upon the prey which floats upon the surface of the water, drowned by the manœuvre. The scales (*Chuen-shan-kiah*, CHIN.) are roughly triangular, concavo-convex, and marked at the attached end with fine grooves, like those on shell-valves. They are brown and semi-transparent, those of the tail being the finest. They were formerly given in all sorts and conditions of disease, not excluding skin diseases. The principal use at the present time is to scratch itching surfaces, for which purpose they are fixed upon a length of bamboo as a kind of curry-comb. This instrument is largely used amongst the prurient Chinese.—*Tickell; Elliot; Jerdon's Mammals; Wallace's Archipelago; Smith's Chin. Mat. Med.*

PANGONG LAKE, in Ruthog or Rudok, in

PANGONG-TSO.

lat. 33° 43' N., is 85 miles long, and about 3 miles in average breadth. The area is 250 square miles. The water is clear and extremely salt, and 142 feet at greatest depth. The Rudok country lies to the east of Ladakh and Rukchu. The lake stretches about 80 miles from east to west, the whole length of the country, at an elevation of 14,200 feet above the sea. The area of Rudok is 4800 square miles, and its mean height 14,600 feet. It seems to have had originally an outlet at its north-west extremity, discharging itself along the valley of Tankatse into the Shayuk. Tso-mo-ri-ri lake appeared to Moorcroft to be deeper and less clear than the lake of Pangong. It contained no fish, and was not much frequented by wild-fowl; the taste of the water was brackish. Gerard afterwards visited this lake, which he calls Chuinonenil; he places it at an elevation above the sea of 15,000 feet, and observes that, whilst it is fed by several considerable streams, it has no efflux, and is kept at its level entirely by evaporation.—*Moorcroft's Travels*, ii. p. 51; *Cunningham; Thomson*.

PANGONG-TSO. The Changpa is a semi-nomade tribe near the Pangong-tso pass. They dwell in their grazing grounds under huts (gal-kol) made of yak's hair. The people there call themselves Bhot.

PANGSHURA, a genus of fresh-water tortoises, family Emydidae. *P. tecta*, *P. flaviventer*, and *P. Smithii* occur in Bengal, and *P. tentoria* in the Indus. See *Chelonia*; *Reptiles*.

PANIANI, a river on the Malabar coast, in lat. 10° 46' N., navigable for small vessels.

PANICACEÆ, the grass tribe of plants, the Gramineæ of Lindley, an exceedingly numerous order, comprising both land and water plants, but no marine ones. They occur in every soil, alone or along with other plants, and from the frigid zone to the tropics. Many tropical grasses are, like the bamboos, of considerable size, rising 50 or 60 feet high. It was estimated by Voigt that the grasses in the East Indies are 1300 in number. The grasses at the foot of the Himalaya form a jungle sufficiently high to conceal the elephant and the rhinoceros, and, in ascending the Himalaya, species of plants are met with of the same genera as found in proceeding from the equator to the poles, and many of the pasture grasses of Europe form the grassy sward of the Himalaya. The temperature of the cold-weather months of the East Indies is the most favourable for the growth of the cereal grasses, and cattle are fed on the green or dry stalks of the *Paspalum stoloniferum*; *Panicum miliaceum*, *helopus*, *miliare*, *Italicum*, *setigerum*, *repens*, *colonum*; *Penicillaria spicata*; *Sorghum vulgare*, *cernuum*, *saccharatum*; *Andropogon Martini*; *Rotböllia glabra*; *Horleum hexastichou*; *Triticum æstivum*.

As a rule, however, the horses are fed on the creeping stems and leaves of the durba grass, *Cynodon dactylon*. The principal of the *Panicacæ* of Eastern and Southern Asia are as under:—

B. Panicæ, Nees.

Paspalum stoloniferum, L., cultivated.
Helopus annulatus, Nees, Bengal.
H. filiculmis, Nees, Bengal.
H. longifolius, Roxb., Sumatra.
H. longifolius, Retz, Bengal.
Coriobolus cimicinus, Nees, Peninsula of India.
Urochloa panicoides, Beauv., Bengal.

PANICACEÆ.

Panicum Egyptiacum, Retz, cultivated.
P. asperatum, Kth., Sumatra.
P. ascariferum, Trin., Garrow, Khasiya.
P. costatum, Roxb., Mauritius.
P. crus-cervi, Linn., Bengal.
P. curvatum, Linn., Peninsula of India.
P. commutatum, Nees, Bengal.
P. corymbosum, Roxb., Coromandel.
P. filiforme, Roxb., China.
P. flavidum, Retz, Bengal.
P. fluitans, Retz, Bengal.
P. helopus, Trin., Bengal.
P. hispidulum, Retz, Bengal.
P. helvolum, Linn., Bengal.
P. Italicum, Linn., cultivated.
P. interruptum, Willde., Bengal.
P. jumentorum, Pers., Guinea grass.
P. lineare, Linn., China.
P. miliaceoides, Roxb., —?
P. miliaceum, Willde., cultivated.
P. miliare, Lam., cultivated.
P. macrochaetum, —? Bengal.
P. Nepalense, Spr., Nepal.
P. orthum, —? Bengal.
P. paludosum, Roxb., Bengal, Circars.
P. patens, Linn., Bengal.
P. repens, Roxb., Bengal.
P. Roxburghii, Spreng., Bengal.
P. setigerum, Retz, Bengal.
P. serrulatum, Roxb., India.
P. sarmentosum, Roxb., Sumatra.
P. sanguinale, Linn., cultivated.
P. stagninum, Retz, Bengal.
P. trigonum, Retz, Bengal.
P. tomentosum, Roxb., Peninsula of India.
P. uliginosum, Roxb., Bengal.
P. verticillatum, Linn., cultivated.
Setaria Germanica, Beauv.
Oplismenus lanceolatus, Kth., Bengal.
O. Burmanni, Rom. and Sch., Bengal.
O. colonus, Kth., Bengal.
O. frumentaceus, Roxb., Bengal.
O. strictus, Schultz, Bengal.
Stenotaphrum dimidiatum, W. and A., Pen. of India.
Trachys muricata, Pers., Coromandel.
Penicillaria spicata, Willde., cultivated.
P. involucreata, Schultz, Coromandel mountains.
Pennisetum barbatum, Schultz, Moluccas.
P. holcoides, Schultz, mountains of India.

C. Saccharæ, Nees.

Sorghum vulgare, Pers., cultivated.
S. bicolor, Willde., cultivated.
S. cernuum, Willde., cultivated.
S. saccharatum, Pers., cultivated.
Chrysopogon acicularis, Hort., cultivated.
C. filiformis, —? Bengal.
Imperata cylindrica, cultivated.
Saccharum spontaneum, Linn., Arabia, E. Indies.
S. fuscum, Roxb., Bengal.
S. semidocumbens, Roxb., Bengal.
S. officinarum, Linn., cultivated.
S. Sinense, Roxb., cultivated.
S. procerum, Roxb., Bengal.
S. sara, Roxb., Bengal.
S. munja, Roxb., Bengal.
S. canaliculatum, Roxb., Bengal.
S. violaceum, Tussac, cultivated.
Batrachium lanceolatum, Schultz, Coromandel.
Lipocercis serrata, Trin., Bengal.
Heteropogon contortus, Beauv., Peninsula of India.
H. tenellus, Schultz, Bengal.
Spodiopogon semisagittatus, —? Bengal.
S. conjugatus, —? Bengal.
S. geniculatus, —? Bengal.
Vossia procer, Wall., Bengal.
Andropogon muricatus, Retz, all India.
A. cymbarius, Linn., Coromandel mountains.
A. prostratus, Linn., Peninsula of India.
A. arundinaceus, —? Bengal.
A. schouanathus, L., all India.
A. Martini, Roxb., all India.
A. iwarancusa, Blane, North India.
A. nardus, Roth. —? South India, Tinnevely.
A. glaber, Roxb., Bengal.

PANICACEÆ.

- A. punctatus*, Roxb., Bengal.
A. Bladhii, Retz, Bengal.
A. portusus, Willd., Bengal.
A. scandens, Roxb., Bengal.
A. trispicatus, Schultz, Bengal.
A. Roxburghianus, Schultz, Bengal.
A. oonjugatus, Roxb., Bengal.
A. binatus, Retz, Bengal.
A. miliformis, Schultz, Lucknow.
Anthistria ciliata, Retz, Konkana.
A. polystachya, Roxb., Bengal.
A. scandens, Roxb., Bengal.
A. heteroclita, Roxb., Bengal.
Apluda aristata, Linn., Bengal.
A. geniculata, Roxb., Bengal.
D. Rotbilleæ, Nees.
Isachnum aristatum, L., Bengal, Peninsula of India.
I. rugosum, Salis., Bengal, Peninsula of India.
Hemarthria compressa, R. Br., Bengal, Pen. of India.
Thyridastachyum perforatum, Nees, Bengal, Pen. of Ind.
Ophiurus corymbosus, Gertn., Peninsula of India.
Rotbilla exaltata, Linn., East Indies.
R. glabra, Roxb., Bengal.
Peltophorus granularis, Beauv., East and West Indies.
P. myurus, Beauv., Coromandel.
Oropetium thomœum, Trin., Peninsula of India.
Zoysia pungens, Willd.
E. Olyreæ, Nees.
Zea mays, L., cultivated.
Coix lachryma, Linn., East Indies.
C. barbata, Roxb., British India.
C. gigantea, Kon., Circars, Bengal.
C. aquatica, Roxb., Serampur.
C. heteroclita, Roxb., Serampur.
C. pupilla, Roxb., Mauritius.
F. Phleæ.
Hygryza ciliata, Nees, Bengal.
Perotis latifolia, Ait., Peninsula of India.
Polypogon maritimus, D. C. N., North India.
Sporobolus diander, R. Br., Bengal.
S. tenacissimus, E. and W., Indies.
H. Stipæ, Nees.
Chetaria hystrix, Beauv., Peninsula of India.
I. Oryzæ, Nees.
Oryza sativa, Linn., cultivated.
Potamocholea Retzii, Griff., Bengal, Peninsula of India.
K. Pappophoræ, Kth.
Pommereulla cornucopia, Linn., Coromandel.
Chloris barbata, Suz., Bengal, Peninsula of India.
Oynodon dactylon, Pers., all India, Europe.
O. filiformis, —? Peninsula of India, Bengal.
Microchloa setacea, R. Br., Peninsula of India.
Dactyloctenium Egyptiacum, Beauv., Tropical America, Africa, all India, Moluccas.
Arachne verticillata, W. and A., Peninsula of India.
Eleusine coracana, Gertn., cultivated.
E. stricta, Roxb., cultivated.
E. Indica, Gertn., cultivated.
E. calycina, Roxb., Coromandel.
M. Avenæ, Nees.
Avena sativa, Linn., cultivated.
A. fatua, Linn., North-West India.
N. Arundinæ, Nees.
Donax arundinaceus, Beauv., S. Europe.
Ampidioxax Bengalensis, Nees, Bengal.
A. karka, Lindley, Peninsula of India, Bengal.
A. bifaria, Lindley, Peninsula of India, Bengal.
O. Triticæ, Nees.
Hordeum vulgare, Linn., cultivated.
H. hexastichon, Linn., cultivated.
H. distichon, Linn., Tartary.
Triticum vulgare, Vill., cultivated.
T. var. æ. æstivum, cultivated.
T. s. hybernum, cultivated.
T. œmpestre, Kth., Hungary.
T. spelta, Linn., —?
Secale cereale, Linn., cultivated.
P. Festuacæ, Nees.
Poa nutans, R. and Sch., Coromandel, Bengal.
P. diarrhena, R. and Sch., Peninsula of India.
P. viscosa, Retz, Peninsula of India.
P. Abyssinica, —? Abyssinia.
P. plumosa, Retz, Moluccas, Peninsula of India.

PANICACEÆ.

- P. elegantula*, Kth., Bengal.
P. unioloides, Retz, Bengal, Peninsula of India.
P. Roxburghiana, Schultz, Bengal.
P. paniculata, Roxb., Bengal.
P. Gangetica, Roxb., Bengal.
P. annua, Linn., North Africa, Caucasus.
P. pratensis, Linn., Europe, Caucasus.
P. trivialis, Linn., Europe, Caucasus.
P. cylindrica, Roxb., Canton.
P. tenella, Linn., Peninsula of India, Bengal.
P. punctata, Linn., Bengal.
P. multiflora, Roxb., Bengal.
P. cynosuroides, Retz, Egypt, Pen. of India, Bengal.
P. Chinenis, Retz, Peninsula of India, Bengal.
Briza, Linn., species.
Cynosurus echinatus, Linn., Caucasus, England.
C. cristatus, Linn., Central Provinces.
Festuca, Linn., species.
Bromus, Linn., species.
Q. Bambusæ, Nees.
Arundinaria callosa, Munro, Himalaya.
A. debilis, Thw., Ceylon.
A. elegans, Kurz, Martaban.
A. Griffithiana, Munro, Khasiya.
A. falcata, Nees, Himalaya.
A. Hookeriana, Munro, Sikkim.
A. intermedia, Munro, Sikkim.
A. Japonica, S. and Z., Japan.
A. Khasiana, Munro, Khasiya.
A. racemosa, Munro, Sikkim.
A. sub-erecta, Munro, Himalaya.
A. Wightiana, Nees, Neilgherry.
Thamnochloa Falconeri, Hook., Nepal.
T. spathiflora, Munro, Himalaya.
Phyllostachys bambusoides, Sieb., Mishmi hills.
P. nigra, Munro, China, Japan.
Bambusa affinis, Munro, Martaban.
B. arundinacea, Willd., mountains of Asia.
B. balcooa, Roxb., Bengal.
B. Beecheyana, Munro, China.
B. Brandisii, Munro, Chittagong, Burma.
B. Falconeri, Munro, Bengal, Assam.
B. flexuosa, Munro, China.
B. gigantea, Wall., Burma.
B. Khasiana, Munro, Khasiya.
B. marginata, Munro, Tenasserim.
B. nana, Roxb., China.
B. nutans, Wall., Nepal.
B. orientalis, Nees, S. India.
B. pallida, Munro, Bengal, Assam.
B. polymorpha, Munro, Burma.
B. regia, Thompson, Tenasserim.
B. spinosa, Roxb., Bengal —?
B. teres, Ham., Bengal, Assam.
B. tulda, Roxb., Bengal, Burma.
B. vulgaris, Wendl., cultivated.
Gigantochloa Andamanica, Kurz.
G. auriculata, Kurz.
G. heterostachya, Munro, Malacca.
G. macrostachya, Kurz.
Oxytenanthera albociliata, Munro, Burma.
O. monostigma, Beddome, Annamallay.
O. nigro-ciliata, Munro, Malabar, Burma.
O. Stockii, Munro, Konkani.
O. Thwaitesii, Munro, W. Ghats.
Melocanna bambusoides, Trin., E. Bengal to Tenasserim.
M. humilis, Kurz, Arakan, Pegu.
M. Kurzii, Munro, Andamans.
Centotheca lappacea, Desv., Coromandel.
Cephalostachyum capitatum, Munro, Sikkim.
C. latifolium, Munro, Bhutan.
C. pallidum, Munro, Mishmi hills.
C. pergracile, Munro, Burma, Pegu.
Pseudostachyum compactiflorum, Kurz, Martaban.
P. Helferii, Kurz, Burma.
P. polymorphum, Munro, Sikkim, Assam.
Besha Rheedii, Kth., Pen. of India, Chittagong mts.
B. stridula, Munro, Bombay, Ceylon.
B. Travancorica, Beddome, Travancore, Tinnevely.
Dendrocalamus crinitus, Kurz, Pegu.
D. flagellifer, Munro, Malacca.
D. giganteus, Munro, Tenasserim.
D. Hamiltonii, Nees, Sikkim.
D. Hookeri, Munro, Assam.

D. longipathus, Kurz, Burma.
D. membranaceus, Munro, Martaban.
D. Pariabii, Munro, Panjab --?
D. sericeus, Munro, Chutia Nagpur.
D. strictus, Nees, India, Burma.
Denochloa Andamanica, Kurz, Andamans.
D. Maclellandii, Kurz, Burma.
D. tjankorreh, Buesche, Java, Philippines.

The structure of the grasses is among the most simple of the perfect forms of vegetation. A stem clothed with alternate leaves whose stalks are thin, and constituting as many sheaths to guard the young and rapidly growing shoots; a few rudimentary leaves collected at the ends of the branches of inflorescence, and constituting flowers; a very small number of stamens, and seed enclosed in a thin pericarp,—are all that nature provides to enable these plants to preserve their race. The floral leaves, called glumes, paleæ, and scales, offer a prodigious number of different appearances, according to the manner in which they are combined or modified.

The distribution of the cultivated grasses is determined not alone by climate, but depends also on the civilisation, industry, and traffic of the people, and often on historical events. Within the northern polar circle, agriculture is found only in a few places. In Siberia grain reaches at the utmost only to 60°, in the eastern parts scarcely above 55°, and in Kamtschatka there is no agriculture even in the most southern parts (51°). The grains which extend farthest to the north in Europe are barley and oats. In the milder climates these are not used for bread, but they afford to the inhabitants of the northern parts of Norway, Sweden, and a part of Siberia their chief vegetable nourishment. Rye is the prevailing grain in the south of Sweden, Norway, and Denmark, and in all the lands bordering on the Baltic, and the north of Germany. In the latter, another very nutritious grain, buckwheat, is very frequently cultivated. In the zone where rye prevails, wheat is generally to be found, barley being here chiefly cultivated for the brewing of beer, and oats supplying food for the horses. To these there follows a zone in Europe and Western Asia where rye disappears, and wheat almost exclusively furnishes bread. The middle and the south of France, England, part of Scotland, a part of Germany, Hungary, the Crimea, and Caucasus, also the lands of Central Asia, where agriculture is followed, belong to this zone. Here the vine is also found; wine supplants the use of beer, and barley is consequently less raised. Next comes a district where wheat still abounds, but no longer exclusively furnishes bread, rice and maize becoming frequent. To this zone belongs Portugal, Spain, part of France, on the Mediterranean, Italy and Greece; further, the countries of the east, Persia, Northern India, Arabia, Egypt, Nubia, Barbary, and the Canary Islands; in these latter countries, however, the culture of maize or rice towards the south is always more considerable, and in some of them several kinds of sorghum and *Poa Abyssinica* come to be added. In both these regions of heat, rye only occurs at a considerable elevation; oats, however, more seldom, and at last entirely disappear, barley affording food for horses and mules. Wheat is cultivated to great heights in the Himalaya, it being one of the chief crops up to 9500 feet on the Chenab, and occurring to

1500 feet on the Sutlej, good to 11,500 feet, and grown to 13,000 feet in Ladakh. *Zea mays* grows up to 7500 and 8000 feet on the Chenab and Ravi; *Eleusine coracana* is frequent up to 6000 and 7000 feet. *Hordeum* is cultivated on the Sutlej to 13,600 feet and 15,000 feet, and on the Chenab and in Ladakh and Lahoul at 8000 and 14,500 feet. But even rice is abundantly grown throughout the Siwalik tract and up the valleys at an elevation in places of 6000 or even nearly 7000 feet; *Paspalum* at 6000 feet; and on the plains of India many of these, wheat, sorghum, barley, are cold-weather crops.

Pantures.—Upon the slopes of the Himalaya there are found abundance of good nourishing pastures, admirably adapted to the requirements of cattle and sheep, and upon which many herds and flocks are reared when the dry season forces them from the plains below. Throughout the flat countries, and spread over vast tracts of indifferent soil, we meet with grasses, or rather herbage, in sufficient abundance, but generally either coarse and poor, or rank and distasteful to animals. In swampy or sterile plains these reedy grasses often fail to tempt even the coarse-feeding buffalo and rhinoceros; and it is a common practice amongst all the Indian villagers at the end of the dry season to set fire to such tracts, on which the long withered herbage readily ignites, and after the first monsoon showers furnishes a rapid and abundant supply of young sweet blades. In some parts of India, especially near the larger towns, it is customary to cut grass for hay as fodder for horses during the excessively dry months.

Besides grain, camels and elephants are fed upon the leaves of various trees. The goats, sheep, and cattle are pastured upon what are called the waste land, or the jungles of the villages; the last are fed also upon chopped straw, and the stalks of the joar (*Sorghum vulgare*), cut into small pieces; while horses, besides pulses, are fed upon grass brought in by men called grass-cutters, but who rather scrape off the ground the creeping stems and young leaves of the grass called Doob or Durba, or Hariali (the *Cynodon dactylon* of botanists). This grows throughout the year, is fortunately the most common species throughout India, and succeeds particularly well in the northern parts, where lawns and pastures of moderate extent are made by planting pieces of its creeping stems. It is also much used for forming a covering for the banks of rivers, ramparts, and esplanades. A very nourishing grass, possessing a powerful aromatic odour, is met with on the elevated lands above the ghats of the south, as well as in the North-West Provinces. So strong are its aroma and flavour, that the flesh, milk, and butter of the animals feeding upon it become in time sensibly affected both in taste and smell.

Throughout India, the pasture lands are everywhere left to nature; there is generally a right of common pasturage, and there is nothing to prevent the village cattle from roaming at discretion. The first step, therefore, towards the improvement of grass lands must be the establishing and keeping up a strong and sufficient fence.

The principal of the Indian grasses, and perhaps the most generally diffused, is the Doob grass (*Cynodon dactylon*), a creeping plant possessing much nourishing property in its long stems no

less than in its leaves. This endures the greatest elevation of temperature, as its roots penetrate far below the surface; and although during the dry monsoon giving no signs of life, it puts forth its tender leaves on the first approach of the rains. The *Cynodon dactylon* or *Hariali* grass of India is occasionally grown from seed. Root creeping through the loose sand, with strong fibres at the nodes. Stem rarely exceeding 6 inches in height, creeping to a considerable extent, matted, very smooth. Florets, all on one side of the spike-stalk, awnless, purplish, and ranged in two close alternate rows. All the stems which lie near the ground take root, and by this means, though an annual plant, it increases and spreads very wide. It yields abundance of seed, of which small birds are very fond. It has been found a successful plan to allow the seed to ripen before the hay is cut, as it then propagates itself by the seeds, in addition to the runners. This grass is also found in Great Britain, but in that country its produce and nutritive properties are comparatively insignificant, while in India it constitutes three-fourths of the pasture. Respecting this grass, Sir W. Jones observes (As. Res. iv. 242) 'that it is the sweetest and most nutritious pasture for cattle, and its usefulness, added to its beauty, induced the *Iliudus*, in their earliest ages, to believe that it was the mansion of a benevolent nymph.' Even the Veda celebrates it, as in the following text of the *A'tharyana*: 'May *Durva*, which rose from the water of life, which has a hundred roots and a hundred stems, efface a hundred of my sins, and prolong my existence on earth a hundred years.'

On the table-lands of the East Indies, most of the food of man is obtained from the millets; but in the low lands, in the eastern parts of the temperate zone of the old continent, in Further India, China, and Japan, northern kinds of grain become unfrequent, and rice is found to predominate. The cause of this difference between the east and the west of the old continent appears to be in the manners and peculiarities of the people. In North America, wheat and rye grow as in Europe, but more sparingly. Maize is more reared in the western than in the old continent, and rice predominates in the southern provinces of the United States. In the torrid zone, maize predominates in America, rice in Asia; and both these grains in nearly equal quantity in Africa. The cause of this distribution is without doubt historical, for Asia is the native country of rice, and America of maize. There are numerous grasses common in India which cattle delight in, but the greater number of these flourish most in the rainy season. Their rapid growth, and the great height they attain, as well as their withered and dry nature towards the close of the year, soon, however, unfit them for pasture grasses. For pasturing sheep, the table-land from Coimbatore to Kandah, and the provinces from Gujerat to Hurriana and Saharunpur, seem suited. But the Himalayas, enjoying a temperate climate and a European-like vegetation, have also abundant and excellent pasturage. During the rainy season, when the temperature is moist but equable, the Himalayas have many grasses resembling those in the plains. These are associated with others belonging to European genera, which are able to withstand the winter's cold; so that throughout

the year, nearly, there is abundant pasturage in the neighbourhood of the Himalayan villages. Of this the inhabitants avail themselves, by driving their herds of cattle and flocks of goats and of sheep to different ranges and elevations, according to the season of the year. The sward upon these mountains is short and thick, and very closely resembles that which is met with on the mountains of Scotland and Wales. Dr. Royle, in his *Illustrations of the Botany of the Himalayan Mountains*, has mentioned that these grasses belong to such genera as *agrostis*, fox-tail grass, cat's-tail, meadow grass, fescue, cock's-foot, bent grass, oat grass, and others.

Guinea Grass has been cultivated in India and Ceylon. When well manured and kept clear of weeds, it grows most luxuriantly, and admits of being cut every six weeks or two months. A small patch near Colombo, which, beginning with about three-quarters of an acre, gradually extended to above an acre and a half, for seven or eight years supplied three or four milch cows and from five to seven horses continually with all the grass required for their consumption, and latterly left a surplus, which was dried for bedding and hay. When first planted it frequently attains a height of even nine feet; and a stalk taken promiscuously from a small patch planted about the year 1867 in Combaconum, measured 10 feet 4½ inches in length; but when cut two or three times it grows thicker, but not so high. It is exceedingly excellent feeding for horses and cattle, and is generally preferred by them to the ordinary country grass, though horses which are hard worked seem to prefer the *Cynodon dactylon* grass roots supplied by the grass-cutters.

Sugar is a product of one of the grasses. It exists in great quantities in the sugar-cane (*Saccharum officinarum*), and species of *saccharum* are valued in India for rope-making and thatching. The boatmen of the Indus universally employ the moonja (probably *Saccharum moonja*) as a towing-rope and for the rigging of their vessels, in all places above Sukkur, two-inch ropes, often fifty fathoms in length, made of moonja fibres, being sufficient for dragging their largest or 1200-maund boats up the Indus, against the full force of the stream. The rope is also light, so advantageous for rigging, and bears without injury alternate exposure to wet and to subsequent drying,—both qualities being essential for a tow-rope. The upper leaves, about a foot or so in length, are preferred, are collected into bundles, and kept for use.

The moonja of Hindustan (*Saccharum moonja*) is collected after the rainy season and kept for use, as it is employed in tying up their cattle at night and for ropes for their Persian wheels. It is said also to be one of the grasses employed for making tow-ropes by the boatmen about Benares. The shur or sara of Bengal (*Saccharum sara*), or the pen-reed grass, is employed by the boatmen about Allahabad and Mirzapore, and esteemed as a tow-line for its strength and durability, even when exposed to the action of water. It is said to be beaten into a rude fibre, and then twisted into a rope. The sacred grass of the Hindus, the dab or koosha of the Brahmans (*Poa cynosuroides*), is also made into rope in N.W. India.

Several indigenous grasses are employed for making mats, baskets, ropes, sacks, nets, and sails.

Species of the bamboo are numerous, and the inhabitants use them for all the purposes to which in Europe wood is applied, and to many of those for which the metals are utilized.

Closely connected with the subject of the pasture grasses is that of providing green food for horses, camels, and elephants, and one to which little attention has been paid, though the supply has much diminished in the neighbourhood of towns and large stations. To this Dr. Wallich called attention in his evidence before the Committee of the House of Commons in 1832, stating that for any number of animals, either for conveyance or for consumption, any quantity of food might be produced in the utmost possible abundance in India, but suggested that a more ready and plentiful supply of food for elephants and camels should be provided, by planting those trees (such as particular Indian fig-trees) which form the staff of life for them, and which are extremely easily cultivated. In the Madras Presidency, considerable exertions were made about the year 1796, in everywhere planting what was called the bastard cedar (*Guazuma ulmifolia*) as green food for cattle (Royle's Productive Resources of India). The need for care on this point increases with the extending cultivation; rye-grass and clover grow well in upland districts in India, and when sown fresh have been found to answer admirably on the Shevaroy, Pulney, Baba-Booden, and Neilgherry hills. In Gujerat, the cultivators feed their cattle on the sweet stalks of the joari and bajra.

The Prangos hay plant grass of Tibet was found by Mr. Moorcroft to be employed both as winter fodder for sheep and goats, and frequently for neat cattle. Writing from the neighbourhood of Draz, he described the plant as producing fatness in a space of time singularly short, and likewise as being destructive to the river fluke; he therefore justly concluded that it would be an invaluable acquisition to any country. When once in the possession of the ground, for which the preparation is easy, it requires no subsequent ploughing, weeding, manuring, or other operation, save that of cutting and of converting the foliage into hay. Though abundant in various directions, the Kashmirians do not esteem it of any value, and Dr. Falconer is of opinion that its importance had been much over-estimated, in consequence of its being the only food in many of the bleak and barren tracts of Tibet. In Kashmir, where, far from a deficiency of herbage, there is actually a superabundance of pasture grasses, it is necessarily much less esteemed. The Prangos will therefore most probably be a valuable acquisition only in countries devoid of good natural pasturage, and of which the climate is favourable to its growth.—*Dr. Cleghorn's Grasses; Moorcroft, Tr. p. 179; Royle, Pro. Res.; Royle, Ind. Fibres; Schouw in Jamieson's Edinburgh Philosophical Journal, April 1825; Spry's Suggestions.*

PANICHENKERNY LEWAY, in Corle Pattoo in Ceylon; a bed of salt formed on it by an inroad of the ocean.

PANICKEA, elephant hunters at Eraoor, in Ceylon, who snare them with a noosed rope. They are Muhammadans.—*Tennant.*

PANICUM, the millet genus of grasses of the order of Panicaceæ. Species of the genera *Eragrostis*, *Panicum*, *Pennisetum*, *Poa*, *Rotbølla*, *Saccharum*, and *Vilfa* are the grasses of the Doab.

The seeds of *Panicum Italicum*, *miliaceum*, *miliare*, and *sanguinale* are used as food for man. Cattle are fond of *P. commutatum*, *helopus*, *jumentosum*, and *setigerum*, as grasses. The genus contains a very large number of species, which abound in the hot parts of the world, and a few extend to higher latitudes and ascend the cool mountains of hot countries. They are valuable as pasture grasses, and for their seeds, which form a large portion of the food of the poorer classes of many nations. Some of the species of *Panicum* of the Brazils are of gigantic stature, and yet tender and delicate in their herbage. The Coapim de Angola of Brazil grows 6 or 7 feet high, and other equally gigantic species constitute the field crops on the banks of the Amazon; while *P. jumentosum*, or Guinea grass, forms the most valuable pasture for cattle in Jamaica.

Panicum brizanthum, *Hochstetter*, from Abyssinia to Nepal, a large-grained perennial millet grass.

Panicum commutatum, *Nees*.

<i>Panicum ciliare</i> , <i>Roxb.</i>	Changali gaddi, . . . TEL.
<i>Makur-jalee</i> , . . . HIND.	Chengali gaddi, . . . "

Cattle are very fond of this grass.

Panicum compositum, *Lin.*, of S. Asia, E. Australia, Polynesia, and New Zealand, a soft-bladed prolific grass, valuable for forest ground.

Panicum flavidum, *Retz.*

<i>P. brezoides</i> , <i>Roxb.</i>	Burti, . . . of the DEKHAN.
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Cattle are fond of it.

Panicum frumentaceum, *Roxb.*

Shama, BENG.	Soak, KANGRA.
Kathlee, DEKH.	Phyamaka, SANAK.
Sanwa, Bajri, . . . HIND.	Saou, Shamoola, . . . SIND.
Damra-shama, . . . "	Bonta shama, . . . TEL.

A wholesome and nourishing grain used by the poorer classes. There are several varieties of it, which yield from 50 to 60 fold; it delights in a light, tolerably dry, rich soil; the same ground yields two crops between the first of the rains in June—July and the end of January, in the Circars, but only one crop in the Northern Provinces.

Panicum helopus, *Trin.*

<i>P. hirsutum</i> , <i>Kon.</i>	<i>Oplismenus hirsutus</i> , <i>Sch.</i>
<i>P. Konigii</i> , <i>Spr.</i>	Jalgantes, BENG.

Cattle are very fond of it.

Panicum Italicum, *Lin.*, Italian millet.

<i>Setaria Italica</i> , <i>Beaur.</i>	<i>Pennisetum Italicum</i> , <i>R. B.</i>
Dokhn, ARAB.	Shali, Pingi, KASH.
Kangni, Kunju, BENG., HD.	Tenna, Navaria? MALAL.
Navanay, CAN.	Arzun, Gal, PERS.
Salan, Kauni, Shalu, CHEN.	Prayingu, Kungu, SANSEK.
Ralla, DUKH.	Kerang, Kora-kang, SIND.
Kang, Kora kang, . . . GUJ.	Tanahal, SINGH.
Kora, Kala-kangni, HIND.	Kushit, Shak, . . . of SUTLEJ.
Chiurr, Kher, . . . JHELM.	Tennay, Kora, TAM., TEL.

This millet is grown in India and Europe. Seeds small, roundish, straw-coloured; pericarp brittle, with a round and partially pellucid grain, alimentary. The grain is prized by the natives of India, who make cakes of it and also prepare it as porridge. For the purposes of pastry it is very little inferior to wheat, and when boiled with milk, forms a light and pleasant meal for invalids. It is grown in abundance in the southern part of Europe, particularly in Portugal, where it is termed *Mitho Painco*. It is rarely grown in the Panjab plains, but is commonly cultivated in the Himalaya, occasionally up to 6500 feet.

Panicum jumentosum, *Pers.*, the Guinea grass,

PANICUM.

has been cultivated to a small extent in India and Ceylon. When well manured and kept clear of weeds, it grows luxuriantly, and admits of being cut every six weeks or two months. A small patch near Colombo, which, beginning with about three-quarters of an acre, was gradually extended to about an acre and a half, for seven or eight years supplied three or four milch cows and from five to seven horses continually with all the grass required for their consumption, and latterly left a surplus, which was dried for bedding and hay. When first planted it frequently attains a height of even 9 feet; and a stalk taken promiscuously from a small patch planted in Combaconum measured 10 feet 4½ inches in length; but when cut two or three times it grows thicker, and not so high. It is excellent feeding for horses and cattle, and is generally preferred by them to the ordinary country grass, though horses which are hard worked seem to prefer the dry grass roots of the *Cynodon dactylon* supplied by the grass-cutters. It should not be given to cattle fresh, but the supply for one day should be cut the day previous, and it should not be cut too close to the ground, but the stalk ought to be left 7 to 9 inches high. It is a good plan to move the ground between the roots every time the grass is cut, and the ground should be heavily manured after every three or four cuttings. It is very hardy, and may be easily propagated. It requires abundant moisture, but will not live in a soil which is at all marshy. It answers best planted in small tufts 1 foot 9 inches to 2 feet apart, which rapidly spread into stools from 6 inches to 1 foot in diameter.

Panicum miliaceum, Willd., common millet.

Cheena,	BENG., HIND.	Tedra	of LADAKH.
Chamy, Navonay, . . .	CAN.	Arkan,	PERS.
Anne, Cheennee, CHENAB.		Shamaks,	SANSK.
Salan,		Unoo, Veehib heda, . .	
Shu,	CHIN.	Rad	of SUTLEJ.
Waree, Shamakh, DUKH.		Varugu, Wargoo, . . .	TAM.
Kegros,	GR.	Varaga, Vargalu, . .	TEL.
Savce, Cheena-wari, HIND.		Samalu,	
Cheenna,	KASH.		

This is a well-known millet, cultivated in the south of Europe and in tropical countries. There are two varieties, one brown, the other yellow coloured. In the south of Europe, as well as in India, it forms a portion of the food of the inhabitants. In the latter country it is cultivated in the cold weather with wheat and barley, and it is the only one of the small grains that is so grown at the cold season of the year. It is imported into Britain from Salonica and Kaffa, for feeding cage-birds and poultry; when husked, it is used as food in puddings. In the Sutlej valley, between Rampur and Sangnam, it grows at an elevation of 6000 to 9000 feet. In the middle regions it is one of the chief crops.

Panicum miliare, Lam.

Kungoo,	HIND.	Nella-shama,	TEL.
Kutkee,	of MULTAN.	Shamalooc,	

This is cultivated in Europe and S. Asia; seeds oval, slightly compressed, brilliant, about a line in length. In India generally cultivated on an elevated rich soil; the seed is one of the sorts of dry or small grain which forms an article of diet of the Hindus who inhabit the higher lands, and cattle are fond of the straw. Alimentary, but the pericarp is with difficulty separated from the grain; chiefly used in a kind of gruel or bouillie. Does not

PANIONIUM.

appear to be common in the Panjab, but Edgeworth mentions it at Multan.

Panicum semiverticillatum, Rott., Lupta, HIND. This grain is inferior to several of those hitherto mentioned, and is eaten by the poor people in the districts in which it is cultivated, such as Coimbatore and other dry grain countries.

Panicum setigerum, Retz, Bura galantee, HIND. Cattle are fond of it.

Panicum spectabile. Indigenous to Adelaide, Australia; grows luxuriantly in dry and stony places, is both sweet and succulent, readily eaten by cattle, and therefore well worthy of introduction into India.—*Ainslie*; *Cleghorn's Panj. Rep.*; *Mr. Caldwell*, in *litteris*; *O'Sh.*; *Spry's Suggestions*; *Stewart's Panjab Plants*.

PANIGRAHANA. SANSK. Hindu marriage; part of the ceremony consisting of the bridegroom taking the bride's hand.

PANINI, a Sanskrit grammarian who founded the present system of Sanskrit. He is the most celebrated of those grammarians whose sutras have come down to us, though he himself mentions many who preceded him. According to Bunsen (iii. p. 565) and Bohtlink, he lived B.C. 350, but Dowson names the 6th or 4th century B.C., and Garrett says no time more definite can be fixed than prior to the era of Sakya (B.C. 543); while Weber thinks that he lived after the date named by Bunsen. Mr. Garrett says that Panini was a native of the village of Salatura, N.W. of Attock, in the country of Gandhara, from which he is sometimes called Salaturiya. He is described as a descendant of Panin and grandson of Devala; his mother's name was Dakshi, and he bears the metronymic of Daksheya. His grammar consists of eight Adhyaya or books, each comprising four Pada or chapters, each chapter containing a number of sutra or aphoristic rules. The sutra amount on the whole to 3996. The rules of Panini were criticised and completed by Katyayana, who seems to have been the teacher and contemporary of Patanjali, who again criticised Katyayana. These three authors are the grammarians of India, and in literary merit their works excel all the grammatical productions of other nations.

The grammar is called Paniniyam. It is the standard authority on Sanskrit grammar, and it is the most original of all the productions of the Hindu mind. It is in the form of sutras. It stands supreme among the grammars of the world, alike for its precision of statement and for its thorough analysis of the roots of the language and of the formative principles of words. By employing an algebraic terminology, it attains a sharp succinctness unrivalled in brevity, but at times enigmatical. It arranges, in logical harmony, the whole phenomena which the Sanskrit language presents, and stands forth as one of the most splendid achievements of human invention and industry.—*Garrett*; *Dowson*; *Bunsen*, iii. p. 565; *Imp. Gaz.*

PANIONIUM, says Herodotus, is a sacred place on Mycale, situate towards the north, which, by the universal consent of the Ionians, is consecrated to the Heliconian Neptune. Mycale is a promontory projecting itself towards Samos. On this mountain the Ionians assemble from their different cities to celebrate the Panionia. A bull was usually offered in sacrifice to Neptune, and if he

bellowed during the performance of the rite, it was accounted an auspicious omen, as such a sound, resembling the roaring of the sea, was held to be particularly acceptable to the ocean king.—*Milner's Seven Churches of Asia*, pp. 76, 77.

PANIPAT, an ancient town in lat. 29° 23' N., long. 77° 1' 10" E., in the Kurnool district of the Panjab, 53 miles N.W. from Delhi, with a population in 1868 of 25,276. It has been supposed by some to be one site on which the Kuru and Pandu chiefs contended about 1900 years before the Christian era, and it has repeatedly since then been made the battle-field on which contests have been held for supremacy over India. The emperor Baber, in his fifth and last expedition into India, led an army of 12,000 men from Kābul; he encountered and completely defeated the emperor Ibrahim Khan, Lodi, at Panipat, 20th April 1526; and in May, Delhi yielded to him without resistance, and he soon after reduced to his power all the provinces of the empire. The emperor Akbar, grandson of Baber and son of Humayun, had to defend his claim to India against Hemu, the Hindu general of Sultan Adili. Hemu, on the death of Humayun, advanced with 100,000 men against Akbar, who, at Panipat, met Hemu, completely defeated him, and took him prisoner; and, while bleeding from his wounds in Akbar's tent, Bahram Khan struck off the captive's head, 5th Nov. 1556. The next decisive battle here was fought 6th Jan. 1761, when Ahmad, the Abdalla, king of Kābul, inflicted a crushing blow on the Mahrattas, which indirectly cleared the way for the establishment of British supremacy. The Mahratta power was then at its zenith. Their frontier extended on the north to the Indus and the Himalaya, and on the south nearly to the extremity of the Peninsula; all the territory within those limits that was not their own paid tribute. They had a well-paid and well-disciplined army of cavalry, with 10,000 disciplined infantry, and a good train of artillery. Ragoba, brother of the ruling peshwa, was commanding their forces in the North-West Provinces, and in 1758 he occupied the whole of the Panjab. But in the year 1769, Ahmad Shah returned to Hindustan, and fell on and almost destroyed the detached force of Dattaji Sindia, and the force under Mulhar Rao Holkar was overtaken and nearly destroyed by a body of Ahmad's army. These failures led to Ragoba resigning the command to Sedasheo Rao, Bhao, a cousin of Balaji Rao, Peshwa. The Bhao was naturally haughty and overbearing, proud of the new greatness of his family, and puffed up by recent success into an overweening confidence in his own abilities both as a soldier and a statesman. He came to the north of India accompanied by Viswas Rao, the peshwa's youthful son and heir-apparent, and by all the great Mahratta and Brahman chiefs without exception. Whatever the nation possessed, either of power or magnificence, was brought forth to give weight to Sedasheo Rao, Bhao. Many Rajput detachments were sent to join him as he advanced, and Suraj Mull is said to have reinforced him with a body of 30,000 Jat. The Daurani army had been many months in India, and were occupying Delhi with a small garrison. Sedasheo Rao took this city and its citadel with little difficulty, and he plundered whatever of value the Persians and Afghans had left. Whilst the Mahrattas were advancing and occupying Delhi,

Ahmad Shah was forming alliances with Najib-ud-Dowlah and the Rohillas, and with Shuja-ud-Dowlah, viceroy of Oudh. Ahmad Shah remained encamped at Anupshahr, on the frontiers of Oudh, till near the close of the rainy season of 1760, when he set out for Delhi, and, between fording and swimming, crossed the Jumna near Onnipura (25th October 1760), which made so great an impression on the Mahrattas, that they hastily removed to Panipat, where they threw up works round their camp, encompassed by a broad and deep ditch, and protected by their numerous artillery. The numbers in the two armies are not accurately known. The Bhao's force seems to have consisted of 50,000 cavalry in regular pay, with at least 15,000 predatory Mahratta horse, and 15,000 infantry, of whom 9000 were disciplined sepoys under Ibrahim Khan Gardi, a Muhammadan deserter from the French service. He had 200 guns, with numerous wall pieces, and a great supply of rockets, which was a favourite weapon of the Mahrattas. These troops, with their numerous followers, made the numbers within his lines amount to 800,000 men. Ahmad Shah had about 40,000 Afghans and Persians, 18,000 Indian horse, and a force of Indian infantry estimated at 38,000, partly Rohilla, but the great majority a rabble of foot-soldiers. He had also about 30 pieces of cannon of different calibres, chiefly belonging to his Indian allies, and a number of wall pieces. Ahmad Shah also encamped and threw up lines round his army. Govind Rao Bundela appeared in the rear of the Daurani camp with 10,000 or 12,000 horse, which spread over the country in the Mahratta manner so as to intercept all supplies. But Attai Khan, the grand vizir's nephew, made a march of sixty miles, surprised Govind Rao's camp about day-break, and completely destroyed his force, Govind Rao himself falling in the action. And now the Mahrattas began to feel the severest want, having entirely eaten up and consumed the town of Panipat, which was within their lines. For two months there were skirmishes, and the Mahrattas thrice made attacks on the Daurani lines. Ahmad Shah had pitched a small red tent in front of his entrenchment, to which he repaired every morning. He was on horseback the whole day, visiting his posts, reconnoitring, and never rode less than fifty or sixty miles a day. At night he placed a picket of 5000 horse as near as he could to the enemy, while other parties went the round of the whole encampment. In the Mahratta camp the distress for supplies became intense. They sent out a foraging party, with innumerable camp followers, to endeavour to bring in some relief; but the helpless crowd was discovered by the Daurani force, and slaughtered in prodigious numbers. On this the chiefs and soldiers surrounded the Bhao's tent in a body, and urged that it was better to run any risk in the field than to perish in misery. The Bhao agreed to their wish for battle; they all partook of the betel-leaf, and swore to fight to the last, and orders were given to make the attack the next morning before day-break. Early in the morning the Daurani spies brought intelligence that the Mahrattas were getting under arms, and Ahmad was roused. He soon appeared on horseback, and ordered out his own troops, himself advancing till he saw the Mahratta army coming on slowly and regularly,

with their artillery in front. Ahmad Shah drew up his army opposite, and himself took post at his little red tent, which was now in rear of his line. The artillery was not much employed by the Muhammadans, and the practice of the Mahrattas was inefficient. The actual engagement was begun by Ibrahim Khan Gardi, who ordered his battalions to charge with the bayonet. Their attack fell on the Rohillas, who were broken with prodigious slaughter. Their defeat exposed the right of the grand vizir, who commanded the centre of the Daurani line, and who was now charged by the Bhao and Wiswas Rao with the flower of the Mahratta army. In this charge, Attai Khan, the vizir's nephew, was killed by his side, and the Daurani troops were forced to give ground, but he himself dismounted, and, with the few that were near him, determined to die at his post. As the din of battle suddenly ceased, Casi Rao was sent by Shuja-ud-Dowlah to inquire the cause. Casi Rao found the vizir on foot in full armour in an agony of rage, reproaching his troops for quitting him, and endeavouring to reform his ranks. Ride to Shuja-ud-Dowlah, said he to Casi Rao, and tell him if he does not support me immediately I must perish. But Shuja-ud-Dowlah, though he kept his ground, did not venture to take part in the action. Ahmad Shah had observed these transactions, and ordered up a reserve to support the vizir. The advantage remained with the Mahrattas until Ahmad, after rallying the fugitives, and ordering all who refused to return to be cut down, gave orders for an advance of his own line, and at the same time directed a division on his left to wheel up and take the Mahrattas in flank. This manœuvre was decisive; for though the closest combat was raging in the centre where the Bhao and Wiswas Rao were engaged on horseback, and where they fought on both sides with spears, swords, battle-axes, and even daggers, yet 'all at once, as if by enchantment, the whole Mahratta army turned their backs, and fled at full speed, leaving the field of battle covered with heaps of dead.' The victors pursued in every direction for fifteen or twenty miles with the utmost fury, and, as they gave no quarter, the slaughter was immense. A large portion of those who escaped the Daurani arms were cut off by the peasants, and great numbers who fell into the hands of the Daurani were massacred in cold blood. Ahmad Shah, instigated by Najib-ud-Dowlah, ordered a search for Jangoji Sindia, who had been concealed by a Daurani chief, and was made away with to avoid detection. He also compelled Shuja-ud-Dowlah to deliver up Ibrahim Khan Gardi, sent for him into his presence to reproach him, and then gave him over to the grand vizir to be confined, but he died of his wounds within a week. The body of Wiswas Rao was found, and a headless trunk, supposed to be that of the Bhao. The whole number of the slain is said to have amounted to near 200,000. Almost all the great Mahratta chiefs were killed or wounded, except those who had been left with a force at Dehli, and Mulhar Rao Holkar, who was accused of having early left the field. Madhaji Sindia was permanently lamed, and Nana Farnavis narrowly escaped by flight. The battle was fought on the 6th January 1761 (Jamadi-us-Sani, A.H. 1174). Grief and despondency fell on all the Mahratta

nation. The wreck of the army retired south of the Nerbadda, evacuating almost all their acquisitions in Hindustan. The Peshwa Balaji Rao retreated slowly to Poonia, where he died in a temple that he had erected. From that time the power of the Brahman peshwas never rallied, but was re-transferred to the Mahratta chiefs of the houses of Sindia of Gwalior, Holkar of Indore, the Gackwar of Baroda, and the Bhonsla rajas of Nagpur.—*Elphinstone's Hist. of India; Cal. Rev. Jan. 1871; Malcolm's Cen. India; Wheeler's Hist. of India; Rennell's Memoir; Asiatic Researches.*

PANIR. HIND. Cheese. Panir-gar, a cheese-maker. Panir-maya, rennet.

PANIR or Panirbad. HIND. Withania conglular, called Akri, a small shrub with light-coloured leathery leaves, which is common west of the Indus and along the Salt Range (to 4500 ft.), and occurs in the Southern Panjab, generally near houses or fields, seldom in the real desert. The Afghans use its berries for curdling milk to make cheese, whence its Persian name Panirbad. The seeds are considered stomachic about Peshawur, and they probably possess anodyne or sedative properties. In home practice they are given to children for colic, are used in veterinary medicine, and are sold in most bazars. Honigberger states that the bitter leaves of this plant are given as a febrifuge by the Lohani.—*Powell; Stewart.*

PANJ. PERS. Five; the five fingers. Panjab, with the Shiah Muhammadans, an alam or standard, the extended hand carried on a pole in the Maharram. Panji-i-Marian, Cyclamen Europæum. Panj-tan, with Muhammadans, the five holy persons,—Mahomed, Ali, Fatima, Hasan, Husain.

PANJAB, a frontier province in the extreme N.W. of British India, lying between lat. 27° 39' and 35° 2' N., and long. 69° 35' and 78° 35' E. It is partly British territory, comprising the revenue districts of Dehli, Hissar, Ambala, Jullundhur, Amritsar, Lahore, Rawal Pindi, Multan, the Dehrajat, and Peshawur, and partly Native States, 56 in number, in feudatory alliance, or politically connected with British India. The area of these two divisions is 141,449 square miles, with a gross population in 1881 of 22,712,120. British Districts, 106,632 sq. m. Pop. 1881, 18,850,437 Native States, 35,807 " " 3,861,683

The Imperial Gazetteer enumerates the Native States for 1868 as under. A part only of the Panjab Census Report of 1881 has been received up to the time (August 1883) of this passing through the press:—

	Sq. M.	Pop.		Sq. M.	Pop.
Kashmir and Jammu, .	79,784	1,534,972	Keuthal and Ratesh, .	116	50,000
Patiala, .	5,412	1,586,000	Baghal, .	124	22,000
Jind(Jheend), 985		190,475	Baghat, .	36	10,000
Nabha, .	804	226,155	Jubbah, .	288	40,000
Bahawalpur, .	15,000	500,000	Kumharasain, .	90	10,000
Chamba, .	3,216	130,000	Bhaji, .	96	19,000
Pataudi, .	50	20,990	Mailog, .	48	9,000
Loharu, .	285	19,800	Balsan, .	51	6,000
Dujana, .	100	27,000	Dhami, .	26	5,500
Maler Kotla, .	164	91,650	Kuthar, .	20	4,000
Kalsia, .	168	68,910	Mangal, .	13	800
Sirmur (Nahan), .	1,096	90,000	Bija, .	4	800
Kahlur (Bilaspur), .	448	60,000	Darkuti, .	8	700
Bashahr, .	3,320	90,000	Taroch, .	67	10,000
Hindur (Nalagarh), .	256	70,000	Sangri, .	16	700
			Kapurthala, .	620	258,372
			Mandi, .	1,000	145,939
			Suket, .	420	41,126
			Faridkot, .	600	68,000

The Panjab proper, the country of the Five Rivers, was conquered, by the British from the successors of Ranjit Singh. By a treaty with that sovereign of the Panjab, Ranjit Singh, dated 26th April 1809, he undertook not to make or allow any encroachment on the states on the left bank of the Sutlej. The largest of these were Patiala, Jheond, Nabha, Kalsia, Maler Kotla, and Faridkot.

In 1838, Ranjit Singh formed one of the triple alliance with the British and Shah Shuja, but he died in 1839. In 1840, his son and his grandson both died by violence, to be succeeded by Sher Singh, who was assassinated in 1843, after which great anarchy prevailed, which, after two years of desolation, terminated in an invasion of the E.I. Company's territory. On the 11th December 1845, the Sikh army crossed the river Sutlej, and marched on to the British head quarters at Moodkee, where, 18th Dec., an engagement ensued, which lasted from three o'clock in the afternoon until after nightfall, when the Sikhs were driven from the field. Three days afterwards they renewed the attack at Ferozshah, fought till the close of the day and all through the night, and were only at length driven back after a frightful sacrifice of life (21st and 22d Dec.). But scarcely had the victors congratulated each other on their success, when a fresh Sikh army advanced, and the British remained masters of the field only after great exertions. The Sikh army had only retired across the river, and they renewed the strife at Aliwal on the 28th January 1846, where they were defeated with an immense loss in killed and wounded; and another sanguinary engagement on the 10th February at Sohraon terminated this eventful war.

Lord Harding acted towards the Panjab ruler with moderation. He might have annexed the entire Panjab, but he contented himself with taking the old Sikh provinces S.E. of the Sutlej, and the hill country lying between the Beas and the Indus; and his successor, Lord Dalhousie, had to do what Lord Harding had left undone, and the Sikhs were defeated, on the Chenab at the close of 1848; at Chillianwalla, January 1849; and at Gujrat, 22d February 1849. The entire dominions were incorporated with those of British India on the 29th March 1849, and on the 1st January 1859 the territory was erected into a separate department under a Lieutenant-Governor.

The Panjab on the north has Kashmir (Cashmere) and the hill states of Swat and Buner; it is bounded on the east by the river Jumna (Jamuna), the North-West Provinces, and the Chinese Empire; on the south by Sind, the river Sutlej (Satlaj), and Rajputana; and on the west by Baluchistan and independent tribes dwelling along the outer face of the north-west Panjab frontier, and inhabiting hills as under:—

Adjoining the frontier of Hazara district, Hasanizai.

Adjoining frontier of Peshawur district, Judun, Bunerwal, Swati, Ranizai, Osman Kheli, Upper Mohmand.

Adjoining frontier of Peshawur and Kohat districts, Afridi.

Adjoining frontier of Kohat district, Buzotli, Sepah, Orakzai, Zymusht Afghan, Turi.

Adjoining frontier of Kohat and Dehra Ismail Khan districts, Waziri.

Adjoining frontier of Dehra Ismail Khan district, Sheorani, Oshterani, Kusrani, Bosdar.

Adjoining frontier of Dehra Ghazi Khan district, Khutran, Kosah, Lughari, Gurchani, Murree, Bugti.

The Muhammadan tribes within the frontier, and British subjects inhabiting partly hills and partly plains, are:—

Hazara district, Turnooli, Gukar, Doond and Sutti, Kaghan, Syuda, and others.

Peshawur district, Yusufzai, Khalil, Mohmand of the plains.

Peshawur and Kohat districts, Khatak.

Kohat district, Bangash.

Dehra Ismail Khan district, Bunnochi, Murwuti, Butani, Chiefs of Tank, Chiefs of Kolachi, Chiefs of Dehra Ismail Khan, Nutkani, Lund.

Dehra Ghazi Khan district, Dreshuk, Mazari.

The Panjab or Five River territory of the Muhammadan administrators comprised only the tract of country enclosed and watered by the confluent streams of the Sutlej, the Beas, the Ravi, the Chenab, and the Jhelum. With the Muhammadans the capital was, as now, Lahore, in the centre of the province; but, under British re-arrangement of the revenue districts, the province now includes Dehli, a more populous city, which was long the ancient metropolis of the Moghul dynasty.

In the extreme west, where the Suliman Hills form a great barrier, the Trans-Indus tract forms the first natural division of the Panjab province. Its northernmost portion consists of the Peshawur valley, encircled by mountains, through which the Kabul river flows down to join the Indus at Attock; together with the hilly district of Kohat, a wild outlying mass of salt-bearing ranges, traversed by minor tributaries of the great river. Its southern half comprises the Dehrajat, a long strip of barren country lying between the Suliman mountains and the Indus, and forming parts of Bannu and Dehra Ismail Khan districts, together with the whole of Dehra Ghazi Khan. The entire length of this narrow belt consists, on the west, of a fertile submontane fringe, merging in the centre into a waterless desert, and sinking eastward into the fruitful lowlands of the Indus. The province also includes the isolated Himalayan valleys of Kangra, Kullu, Lahul, and Spiti, and the glens of the Hazara frontier among the outliers of the main Central Asian system of the Hindu Kush.

The Panjab must always have been the line which tribes and races followed in migrating to the south-east. The East Aryans in their migrations towards India came through the Panjab, and the oldest Vedas contain their records while dwelling there. Their emigrations into the Indus country occurred about B.C. 4000, and the opening to the Vendidad describes the succession of the foundation of 14 kingdoms, the last and most southern of which being this land of the Five Rivers, the Panjab.

Alexander the Great of Macedon came by way of Bactria and the Hindu-raj pass, crossed the Indus near Taxila, identified by General Cunningham with the ruins of Shah Dheri in the Rawal Pindi district. He found there great warlike tribes, each with a purely republican constitution, and on one occasion he treated with 300 deputies of a tribe, who seem to have been elected and sent as delegates of the people. The best account of them is at page 300 of Heeren's volume on the Persians (Campbell, p. 8). After receiving the adhesion of Mophis or Taxiles, king of that city, he advanced with little resistance to the banks of the Hydaspes or Jhelum. Effecting the passage

of the river at Jalalpur, in the Jhelum district, he encountered the army of Porus (Purusha) at Mong, in Gujerat, and defeated the Indian monarch with a loss of 12,000 slain, Porus himself being taken prisoner, but restored by Alexander to his entire kingdom. The conqueror halted for a month in the neighbourhood of the Hydaspes, and founded two cities, Nikaia and Bukephala; after which he overran the whole Panjab as far as the Hesudrus or Sutlej. The refusal of his troops to proceed farther from home compelled him to fall back once more upon the Hydaspes, where he embarked on board a fleet to sail down the Indus. The only opposition he met with was from the Malli, who occupied the modern district of Multan. At the siege of their capital, he received a severe wound, in revenge for which he put every person within the walls to the sword.

The Greek brigades in the Panjab were placed first under Philip, while the civil administration of the country remained in the hands of the native princes, Taxiles and Porus. Afterwards, on the murder of Philip by the mercenary soldiers, Alexander (Anabasis, vi. 2; vii.) directed Eudemos and Taxiles to govern the country until he should send another deputy. It is probable, however, that the Greeks continued to retain the charge; for after Alexander's death, in B.C. 323, Eudemos contrived, by his general Eumenes, to make himself master of the country by the treacherous assassination of king Porus (Diodorus, xix. 5). Some few years later, in B.C. 317, he marched to the assistance of Eumenes, with 3000 infantry and 5000 cavalry, and no less than 120 elephants. With this force he performed good service at the battle of Gabiene. But his continued absence gave the Indians an opportunity not to be neglected; and their liberty was fully asserted by the expulsion of the Greek troops and the slaughter of their chiefs. (Justin, xv. 4—'Præfactos ejus occiderat; again, 'Molienti deinde bellum adversus præfactos Alexandri.') Chandragupta was present when Porus was murdered, and he became the leader of the national movement, which ended in his own elevation to the sovereignty of the Panjab. Justin attributes his success to the assistance of banditti. (Justin, xv. 4—'Contractis latronibus Indos ad novitatem regni sollicitavit.') But in this Col. Cunningham thinks he has been misled by a very natural mistake; for the Aratta, who were the dominant people of the Eastern Panjab, are never mentioned in the Mahabharata without being called robbers. (Lassen, Pentapot Indica—'Aratti profecto latrones,' and 'Bahici latrones.') The Sanskrit name is Arashtia, the 'kingless,' which is preserved in the Adraistes of Arrian, who places them on the Ravi. They were the republican defenders of Sangala, or Sakala, a fact which points to their Sanskrit name of Arashtia, or 'kingless.' But though their power was then confined to the Eastern Panjab, the people themselves had once spread over the whole country:—'Ubi fluvii illi quini . . . ibi sedes sunt Arattorum' (Lassen, Pentapot Indica, from the Mahabharata). They were known by the several names of Bahika, Jarttika, and Takka; of which the last would appear to have been their true appellation; for their old capital of Taxila or Takka-sila was known to the Greeks of Alexander; and the people themselves still exist in

some numbers in the Panjab hills. The ancient extent of their power is proved by the present prevalence of their alphabetical characters, which, under the name of Takri or Takni, are now used by the Hindus of Kashmir and the northern mountains, from Simla and Subathu to Kabul and Bamian. On these grounds, Major Cunningham identifies the banditti of Justin with the Takka, or original inhabitants of the Panjab, and assigns to them the honour of delivering their native land from the thralldom of a foreign yoke. This event occurred most probably about 316 B.C., or shortly after the march of Eudemos to the assistance of Eumenes. It was followed immediately by the conquest of Gangetic India (Justin, xv. p. 4), and in 316 B.C. the rule of Chandragupta was acknowledged over the whole northern Peninsula, from the Indus to the mouths of the Ganges. According to Colonel Tod, the Yavan, or Greek princes, who apparently continued to rule within the Indus after the Christian era, were either the remains of the Bactrian dynasty, or the independent kingdom of Demetrius or Apollodotus, who ruled in the Panjab, having as their capital Sagala, changed by Demetrius to Euthymedia. Beyer says, in his Hist. Reg. Bact., p. 84, that according to Claudius Ptolemy there was a city within the Hydaspes yet nearer the Indus, called Sagala, also Euthymedia; but he scarcely doubts that Demetrius called it Euthymedia from his father, after his death and that of Menander. Demetrius was deprived of his patrimony, A.U.C. 562. Sagala is conjectured by Col. Tod to be the Salbhanpura of the Yadu, when driven from Zabulistan, and that of the Yuchi or Yuti, who were fixed there from Central Asia in the fifth century, and if so early as the second century, when Ptolemy wrote, may have originated the change to Yutimedia, the 'Central Yuti.' Numerous medals, chiefly found within the probable limits of the Greek kingdom of Sagala, either belong to these princes or the Parthian kings of Minagara on the Indus. The legends are in Greek on one side, and in the Sassanian character on the reverse. The names of Apollodotus and Menander have been deciphered, and the titles of 'Great King,' 'Saviour,' and other epithets adopted by the Arsacides, are perfectly legible. The devices, however, resemble the Parthian. These Greeks and Parthians must have gradually merged into the Hindu population.

Towards the commencement of the Christian era, this part of India appears to have been overrun by successive hordes of Scythians, whom some mighty revolutions in Tartary had expelled from their native seats. The Chinese historians say that about a century before this era, the Yuti (Geta or Jit), who occupied a vast country between China and the Tian Shan, or the Celestial Mountains, were, after many sanguinary wars, expelled by the Heung-noo, or Hun, and forced into the countries of the Oxus and Jaxartes, whence they extended themselves to Afghanistan and the borders of India. The Indus was only a temporary barrier, and they appear to have occupied the whole country of the Five Rivers. These conclusions, heretofore formed from meagre historical evidence, have been confirmed by the discovery of coins of Panjab rulers, whose names, Azes and Azilias, have no affinity with Greek or Hindu nomenclature, and denote a barbarian

origin. The great Indian sovereign, Vikramaditya, expelled the Scythian princes from the Panjab, and his era, called the Samvat, B.C. 50, is supposed to commence from a great victory obtained by him over the barbarians in that country, which completed his conquest of all Hindustan. His empire, however, fell to pieces after his death, when new hordes of Scythians overran the Panjab, and established, about B.C. 20, a dynasty of kings bearing the name of Kadphises. Coins of these kings have been recovered, and their barbarous effigies clearly distinguish them from Greeks or Hindus. This dynasty is supposed to have reigned throughout the whole of the first century of our era, when it was subverted by a fresh swarm of Scythians, under the Kanerki kings. Between the dynasties, however, there is evidence, from the testimony of Apollonius Tyaneus, related by Philostratus, that a Græco-Parthian king named Phraotes reigned in the Panjab, which fact is supported by coins of Undophernes and Gondophares, both called in the Aryan legends upon the coins. The power of the Kanerki kings in the Panjab must have continued for some centuries, for in the topos or tumuli which have been opened in that country, Kanerki coins have been found along with those of Kadphises and other predecessors of the race, mixed with coins of the Sassanian monarchs of the third and fourth centuries of our era. That these Scythian invaders continued to pour into and occupy the Panjab, is a fact attested not only by Fa Hian, a Chinese traveller in India, early in the fifth century (who crossed the Five Rivers, and found Buddhism prevalent in that country), but by an inscription found by Colonel Tod in a temple near Kota, in Rajputana, dated A.D. 409, which contains a memorial of a Jit prince of Salpura, at the base of the Siwalik mountains. Colonel Tod considers it to be proved beyond a doubt, 'that these Jit princes of Salpura, in the Panjab, were the leaders of that very colony of the Yuti from the Jaxartes, who in the fifth century, as recorded by De Guignes, crossed the Indus, and possessed themselves of the Panjab.' Various indications appear in the Rajput annals of their conquests and settlements in this country, even as far as the Jhelum. In more modern times, the country has been held by Mahmud's successors, Chengiz Khan, Timur, Baber; Humayun, and his successors, Nadir Shah, Ahmad Shah, Ranjit Singh, and the British.

The population of the Panjab is now of a varied character. As a highway through which invading and immigrant races sought to pass, most of them left portions of their number there, and its people are of Scythic, Aryan, Arab, and Mongoloid origin; and the census of 1872 enumerated the tribes as under:—

Christians, 23,554, viz.—	Muhammadsai, 26,537
European, . . . 17,574	Kamalzai, . . . 845
European, . . . 3,379	Saddozai, . . . 5,443
Asiatic, . . . 2,601	Allezai, . . . 3,752
Muhammadsai—	Popalzai, . . . 586
Syud, . . . 212,540	Orakzai, . . . 1,852
Mughul, . . . 99,025	Waziri, . . . 12,350
Pathan, viz.—	Labani, . . . 69,971
Yusufzai, . . . 98,727	Baluch, viz.—
Khatk, . . . 72,723	Lughari, . . . 15,890
Mohmand, . . . 29,159	Bozdar, . . . 1,642
Pangwah, . . . 31,774	Mazari, . . . 5,885
Khalil, . . . 18,363	Lund, . . . 7,887
Daudzai, . . . 16,843	Koon, . . . 14,665

Dreshuk, . . . 4,449	Khatri, . . . 384,829
Kasrani, . . . 4,958	Rajput, hills, 213,163
Rajputs, viz.—	Rajput, plains, 121,129
Bhatti, . . . 156,151	Banya, . . . 267,953
Chib, . . . 9,909	Arora, . . . 477,269
Janjua, . . . 21,303	Bhatia, . . . 26,543
Tiwana, . . . 1,482	Kayath, . . . 14,273
Siyal, . . . 47,197	Sudh, . . . 17,799
Gheba, . . . 9,537	Labana, . . . 47,690
Rangar, . . . 121,109	Jat, . . . 1,876,091
Muhammadsai converts—	Tagah, . . . 9,212
Jat, . . . 1,309,399	Gujar, . . . 112,319
Gakkar, . . . 27,683	Ahli, . . . 112,488
Dhand, . . . 26,414	Kambob, . . . 57,181
Sati, . . . 11,498	Kalal, . . . 26,405
Kharal, . . . 28,815	Kaneyt, . . . 86,269
Karal, . . . 17,329	Ghirath, . . . 115,257
Kathia, . . . 2,715	Chang, . . . 50,796
Wattu, . . . 18,217	Sikhs, . . . 1,129,319
Meo, . . . 130,385	Buddhist and Jain—
Mina, . . . 45	Bhoti, . . . 278
Gujar, . . . 424,095	Bhabrah, . . . 14,091
Paracha, . . . 12,784	Other Asiatics, viz.—
Khojah, . . . 54,969	Parsee, . . . 414
Kashmiri, . . . 230,853	Sansi, . . . 40,869
Hindus, 6,125,460, viz.—	Bavria or Baoriah, 19,141
Brahman, . . . 800,547	Harni, . . . 3,179

The Chamars were included amongst the Hindus and Sikhs, and were 654,406 in number.

At the 1881 census, the total numbers of the religious sects were found to be 22,712,120, as under:—

Muhammadsai, 11,662,434	Buddhists, . . . 3,251
Hindus, . . . 9,252,235	Zoroastrians, . . . 465
Sikhs, . . . 1,716,114	Jews, . . . 31
Jains, . . . 42,678	Others, . . . 1,153
Christians, . . . 33,699	

The Muhammadsai are nearly all of the Sunni sect. Great portions of Hindu and Jat tribes have adopted the Muhammadan religion. The chief non-Hindu or aboriginal tribes are the Baori, Chamar, Changar, Chuhra, Dumna, Dhanak, Dagri, Labana, Mahtam, Meg, Od, and Sansi.

Baluch contribute to the predatory classes; others of the homeless, criminal classes are:—

Aheri, . . . 13,086	Harni, . . . 1,338
Baori, . . . 22,024	Jhabel, . . . 8,063
Beldar, . . . 3,449	Keshal, . . . 1,251
Chamar, . . . 28,886	Mina, . . . 1,116
Changar, . . . 28,886	Od, . . . 15,627
Chuhra (scavengers), . . . 4,502	Pakhiwar, . . . 4,502
Gogra, . . . 3,110	Sansi (gypsies), . . . 21,309
Gurmang, . . . 10,594	Thori, . . . 10,594

Languages.—Nine languages are current in the Panjab,—English, Hindi, Jataki, Kashmiri, Panjabi, Pushtu, Persian, Sindhi, and Urdu or Hindustani. Pure Panjabi is confined to the small number of Sikhs who are settled in the different cities and towns. It is recognised as a dialect of Hindi. The Brij Basha (or Bhaka, as it is pronounced on the Ganges) and the Panjabi are the two most cultivated varieties of Hindi, but the Panjabi passes into Multani, which a good philologist has shown to be a corrupted form of Panjabi; whilst Jataki, again, farther to the south, is a dialectal form of Multani. The educated Muhammadsai and many of the Hindus use Persian in their correspondence.

Rivers.—The modern names of the five rivers which give the province its name, are the Jhelum, the Chenab, the Ravi, the Beas, and the Sutlej. They ultimately join the Indus, which is known to the people as the Sind and the Attock, and anciently the Aba-Sin. They are mentioned here in their succession eastward from the Sind or Indus, Each mesopotamia district between two rivers is

called a doab, from Do, two, and Ab, water; and of these there are five, viz. the Jalandhar Doab, between the Sutlej and the Beas; the Bari Doab, between Ravi and the Beas or the Sutlej; the Rechna Doab, between the Ravi and the Chenab; the Chuj Doab, between the Chenab and the Jhelum; the Doab-i-Sind Saugur, between the Jhelum and the Indus. The names of three of the doabs are formed by joining the initial letters of the rivers; thus, between the Beas and Ravi is the Bari Doab; between the Ravi and Chenab is the Rechnab; and that between the Chenab and the Jhelum is the Chuj.

Modern names.	Sanskrit names.	Greek names.
Jhelum or Bihut.	Vitasta.	Hydaspes.
Chenab.	Chandra Bhaga, or Sanda Bhaga.	Ascesines.
Ravi or Rhoas.	Airavati.	Hydraotes.
Beas, Boya, Veya.	Vipasa.	Hyphasis.
Sutlej or Ghara.	...	Hosidrus.

The Panjab rivers are constantly shifting their channels. The Beas has altogether lost its independent course, and is now a mere tributary of the Sutlej. The valley of the Chenab, below Kalowal, is nearly 30 miles broad, and that of the Ravi, near Gujra, is 20 miles, the extreme limits of both rivers being marked by well-defined high banks, on which are situated many of the most ancient cities of the Panjab. Multan was originally situated on two islands in the Ravi, but the river has long ago deserted its old channel, the nearest point of which is now more than 30 miles distant. But during high floods the waters of the Ravi still flow down their old bed, and General Cunningham had twice seen the ditches of Multan filled by the natural overflow of the river.

The rivers are liable to sudden rises. This rise will frequently take place in the course of a day or two, sometimes in a few hours. The Markanda, in the Ambala district, at one time of the year is like an ocean; at another it will be a slender stream, hardly to be called a river. The Indus always contains a large body of water, but even this river is liable to become dammed up in the hills whence it rises; the water then accumulates, and, bursting at length its dams, comes down with terrible force. Once or twice these floods have occurred, giving only a few moments' notice by a sound as of distant thunder, and then coming on with a sweep that spread desolation for many miles.

The chief towns are Attock, Dehra-i-Ghazi Khan, Dehra-i-Ismail Khan, Jalandhar, Jhelum, Kapertalla, Lahore, Leia, Multan, Peshawur. The Panjab has also districts on both sides of the river Sutlej, designated Cis-Sutlej districts east of that river, and Trans-Sutlej states west of that river. In the Cis-Sutlej territory are the districts and towns of Ferozpur, Sohraon, Kithul, Ludiana, and Ambala. The Trans-Sutlej states are Hoshiarpur, Dharmasala, and Kangra.

Panjab is a largely manufacturing country, the value of the produce from looms and workshops being estimated in 1871-72 at £4,850,000. Their woollen manufactures are from the exquisitely soft fleeces of Rampur and Kernan, from sheep wool, and from goat and camel hair. Silk is obtained from Afghanistan, Yarkand, Bokhara, Bengal, and China, and manufactured at Amritsar, Lahore, Multan, Bahawalpur, and Jalandhar, and the manufactures valued at £150,000 a-year.

There are about half a million of weavers in

Sialkot, Hoshiarpur, Amritsar, Ambala, and Jalandhar. Kyes, loongi, daryal, and other silk manufactures are exported chiefly to Delhi, Amritsar, and Peshawur; and kundla and gold lace work are made largely for local consumption and for export to Multan, Rawal Pindi, and Peshawur. Amritsar town being the commercial capital of the Panjab proper, its trade is carried on with Bokhara, Kabul, Kashmir, Calcutta, Bombay, Sind, Rajputana, the N.W. Provinces, and all the principal marts in the Panjab. Manufactures of pashmina and silk goods give employment to large numbers of workmen. The pashmina goods are manufactured from the fine wool of Tibet, imported through Kashmir, and 4000 looms are engaged in this trade, each of which is worked by two men. The workmen are all Kashmir Muhammadans, and the manufacture is said to have been established since A.D. 1840. The most valuable articles are the Kashmir shawls. The silk manufacture has long been established at Lahore, and has spread from that place to Amritsar, where it is now carried on to about an equal extent.

About half the population are engaged in agricultural pursuits. The most industrious are the Rain, Mali, Saini, Lubana, and Jat. The Rain are diligent, persevering men, and on good land will often sustain three or four successive crops of vegetables, which they produce largely in addition to the grain crops.

The Mali are chiefly gardeners.

The Saini occupy sub-mountain tracts, and grow sugar-cane largely. Their village lands are always in a high state of tillage.

The Lubana or Brinjara are to be found on some waste lands, and are careful and thrifty cultivators. They have many settlements along the right bank of the Ravi.

The Jat, about two millions in number, are conspicuous for their industry, and the wives cheerfully work along with their husbands in all field labour. They grow grain largely, and their well-worked and well-fenced fields can always be distinguished from those of the Syud, Pathan, Brinjara, Brahman, Gujar, Rangar, and the Rajput, the last being the worst, for he considers ploughing beneath him, and will never hold the plough if he can get any Chamar or other low caste man to do it for him.

As a rule, the cultivators do not consume the wheat they produce, but keep it for sale, and subsist on the pulses, barley, and inferior grains.

The plain districts of the Panjab greatly resemble one another in their general physical features, the main difference consists in the fact that some are better irrigated than others, and that some include large tracts of sandy unproductive country, like the desert portion of Multan or Muzaffarnagar. The climate of such districts is hot and sultry; the amount of rain that falls is at its minimum, and cultivation is almost entirely dependent on canals and artificial irrigation. In this respect no doubt these districts differ widely from the rich plains of the Jalandhar and Bari Doabs, where not only do the great rivers fertilize the soil, but the periodical rainy season seldom fails to yield an abundant increase to the summer sown crops of the kharif. The climate is in general characterized by dryness and warmth; little rain falls except in those parts extending

PANJAH.

along the base of the Himalaya, and where the south-west monsoon is partially felt. The face of the country presents every variety, from the most luxuriant cultivation to the most sandy deserts, and the wildest prairies of grass and brushwood. A traveller passing through those lines of communication which traverse the northern tracts, would imagine the Panjab to be the garden of India; on the other hand, returning by the road which intersects the central tracts, he would suppose it to be a country not worth annexing. From the base of the hills southward, there stretches a strip of country from 50 to 80 miles broad, watered by mountain rivulets, and for fertility and agriculture unsurpassed in Northern India. In their downward course the rivers spread wealth and fruitfulness on either side, and their banks are enriched with alluvial deposits, and fringed with the finest cultivation. These tracts, though unadorned with trees, and unrelieved by any picturesque features, are studded with well-peopled villages, are covered with two waving harvests in the year, and are the homes of a sturdy, industrious, and skilful peasantry. Within this tract are situated the sister capitals of Lahore and Amritsar, and most of the chief cities, such as Dinanuggur, Buttala, Sealkote, Wazirabad, Gujranwala, Ramnuggur, and Gujrat.

The sloping plain of the Panjab varies in elevation, from 600 to 2000 feet above the sea; Lahore being but 900, and Jhelum about 1600. It declines regularly to the south-western extremity. The soil of the doabs is of varied fertility; generally, it is very sandy, but they are rendered highly productive by irrigation from the rivers which traverse these plains. The rich and fertile tracts that border on the great rivers of the Panjab, extending inland to the centres of the doabs as far as the fecundating influences of their waters are felt, yield annually an abundant harvest of grains of all kinds, and pulse, which form the staple articles of food to the great majority of the population.

The plains of the Panjab may be described as vast expanses of alluvial clay and loam, whose elementary constituents must once have been the same as now form the rocks of the huge ranges of mountains to the north. The principal constituents that produce a variety in the nature of soils, and one which is very important in the Panjab island, in fact the main distinction of soils (apart from that of their containing or not containing 'kalr,' the efflorescent salt), is that the soil is sandy, as in many portions of districts it is, or that it is rich loam and clay.

The districts of Lahore, Gujranwala, Amritsar, Gujrat, Jalandhar, Ludiana, Ambala, Delhi, and Peshawar, are watered districts, whether irrigated by canals, wells, rivers, or abundance of rain, and their soils are chiefly alluvial.

In the Multan, Muzaffarnagar, Shahpur, or Guggaira districts, the soil is arid and sandy, they are not well watered, and the rainfall is small.

The country to the east of the Hydaspes (Jhelum) is open and fertile, but is rugged to the west of that river, and sandy towards the junction of the five rivers.

PANJAH. HIND. A model or drawing of a man's hand with the fingers extended. A representation of this is mounted on a staff by Shiah Muhammadans, and carried in procession in the

PANNA.

Maharram as a standard, being supposed by them to represent the hand of Ali, and the extended fingers are said to symbolize Mahomed, Ali, Fatima, Hasan, Husain. They get the names of certain of the martyrs, viz. Panjah-i-Haidar, or Panjah-i-Murtuza Ali. An impression on paper of the open hand is occasionally made as a signature. At Amritsar, in March 1846, when Gulab Singh was formally inaugurated as maharaja of Jummoo, he exhibited the engagement with the lama of Lhasa, drawn out on his part in yellow, and on the part of the Chinese in red ink, and each impressed with the open hand of the negotiators dipped in either colour, instead of a regular seal or written signature. The Panjah, or hand, seems in use in Asia as typical of a convent, and it is moreover a common emblem on the standards of the Eastern Afghans. Hyder Ali, father of Tipu Sultan, is said to have used his hand smeared with ink as his attestation to important documents.—*Cunningham's Sikhs*.

PANJAM. TEL. A class of cotton cloths manufactured in the south of India.

PANJAY TANOBIA, a class of slaves in Coorg.

PANJERANG. MALAY. A titular designation of a native chief.

PANJPAL, a section of the Iliasai Yusufzai tribe in part of the Buner valley.—*H.A.N.W.F.*

PANJSHAHR, a populous valley which affords a communication with Badakhshan. It contains silver mines, which were worked by Abul Fazl.

PANJ-TAN, five holy persons of the Shiah Muhammadans,—Mahomed, Ali, Fatima, Hasan, and Husain.

PANKA or Ganda, a sect of Hindus, followers of Kabir, who is said to have appeared in the weaver caste, in the same country and at the same time as Rai Das, both being disciples of Ramanand, and their doctrines being similar in many respects. They cultivate the land, but they are not generally esteemed as cultivators.

PANKHA. HIND. A fan; a wooden frame and fringe suspended overhead, which, when swung, causes a movement in the air. Palm leaves made into fans.

PANKHI and Namadah are coarse heavy felts, used as blankets.

PANKONG, a lake, 13,930 feet above the sea, in Ladakh in Chinese territory, forty miles long and two to nearly four miles wide.—*Drew*.

PANKTI - PAVANA. This term, rendered 'taking precedence at festivals,' means the purifier of the row, or range, or assembly, that is, Jagad-dhara says, in the place where there is food, or, in other words, they were Agra-bhojana, the first served at feast. He also quotes a text, without mentioning his authority, to show that the term implies a Brahman who has read the Yajur, Sama, and Atharva Vedas, and the word is similarly explained by Menu, iii. p. 184.—*Hind. Th.* ii. p. 11.

PAN-I-LOUN. BURM. In Tavoy, a close-grained red wood, used for building.—*Dr. Wallich*.

PANNA, a native state in Bundelkhand, under a chief, descendant of Maharaja Ch'hator Sal. Its area, 2555 square miles, with a population in 1875 of 183,000, and revenue five lakhs. It is mostly on the table-lands above the Vindhyan ghats. North-east of the town diamonds are found.

PANNA. The standard of Panua under the Peshwa was called the Ankusi rupee, from Ankus, the instrument used by the mahout to guide the elephant; probably a symbol marked on the coin.

PANNAGAL, snake-charmers in the Deva-loka.

PANNAM KALANGOO. TAM. The first shoot from the planted palmyra nut, the germ of the future tree. The people of Southern India and Ceylon have for many hundred years been in the habit of eating this. It is about the size of a common carrot, though nearly white. It forms a great article of food among the natives for several months in the year; but Europeans dislike it, from its being very bitter. Recent experiments have proved that a farina, superior to arrow-root, can be obtained from it, prepared in the same way; and 100 roots, costing 24d., yield one and a half to two pounds of the flour. In Madras 100 cost 14d. Pannam Oli are leaves of the palmyra tree, prepared for writing on. Pannam Pallam, fruit of the *Borassus flabelliformis*. Pannam Kalloo is toddy or palm wine.—*Simmonds' Comm. Products*, p. 376.

PANNI. HIND. Slips of leather for gilding. Pannigar, a leather gilder.

PANNI, a servile caste of Malabar. The Panniar of Malabar are agricultural slaves.

PANNIAR or Punniar, a town in the Maharaja Sindia's dominions, Central India, in lat. 26° 6' 12" N., and long. 78° 2' 2" E., 12 miles west of Gwalior. On the 29th December 1843, on a rising of the Gwalior army, the British Indian army, under Sir Hugh Gough, defeated them, and took 2400.

PANON, a large tree of Lucknow, grows spontaneously in the Terai; its timber is used for beams, etc.—*Cal. Cat. Ex.*, 1862.

PANORAMA. Panoramic representations of holy places are common in India, in the form of long rolls fixed against a wall in compartments. Scenes from the Mahabharata and Ramayana, in illuminated and embellished portable scrolls, are very frequent; also, in the Western Provinces of India, to meet with a kind of fresco-painting is common upon the walls of gardens or enclosures of tanks, representing mythological or historical subjects.

PAN-PATRA. HIND. A cup, often seen figured in the hand of the goddess Devi, or Bhawani, for the purpose, it is said, of receiving the blood of victims.

PAN-SALA, a cell in a Hindu temple or in a Buddhist pagoda, for the residence of the priests.

PAN SAM are Chinese words of salutation by a visitor, meaning, I respectfully request permission to kneel and knock the head.

PANSARI. HIND. A drug-vendor.

PANSEE, a Muhammadan tribe or sect in Yunnan, who about A.D. 1862 rebelled against the Chinese authorities. In A.D. 1863 their own numbers were not over twenty thousand, but their forces soon rose to two or three hundred thousand, among whom were Chinese, Shans, and a few Ka-kyen. In any place that resisted after taking, the old and the adults were slain wholesale, the young men made Musalmans or slaves, the young women only had death exchanged for the harem. The whole of Yunnan fell into their hands, and the Shan states belonging to it accepted their suzerainty, but they exasperated

their Shan subjects into open hostility. Their head or king was called Tuwinsin, and resided at Tali. The Ayebeing Bochup was the General and Commissioner in 1863; he conducted hostilities against an army of Chinese, under Leesitagli or Lioguanhan, in the Nalukan mountains, between Mainla or Kaingai and the Pansee post Mopu, two days from Momiru. The Commissioner of Momiru was Sophusyanjin. The Pansee seem the Panthay tribe, q.v. The Chinese put down the rebellion.

PANSERI, from five, and Ser, a weight or measure of five seers.

PANSH-AGNI. HIND. In Hinduism, five fires,—that is, one towards each cardinal point, close to the devotee, with the sun, on which he constantly looks, over his head; standing with uplifted arm, without aid or support, day and night, feeding on air, immovable, on his right toe, upon the afflicted earth, etc.

PANSHEN ERDENI, Lama, resides at Tashilumbo, eight days' journey to the west of Lhasa.

PAN SOOPAREE. HIND. From Pan, betel leaf, and Sooparee, areca-nut. In India the handing round of these to visitors is a ceremonial equivalent to the English custom of cake and wine. On taking leave, the ceremonial is various. With the nawabs of the Carnatic, the nawab would put a little at on the visitor's handkerchief, then sprinkle it with rose-water, then present a rose-bouquet, then a bheri of pan sooparee, and, suspending a garland of jasmine round the neck, shook hands and dismissed the visitor. At the palaces in Hyderabad of the nobles Vikar-ul-Umra, Shams-ul-Umra, and Sir Salar Jung, the host accompanied the guest to the door, and then presented one or more little phials with rose-attar.

PANSWAH or Panshaw or Pansi. HIND. A small boat attached to a budgerow, used on the Ganges and Hoogly rivers, with an awning of matting and thatch over the stern. It is a passenger and goods boat, is usually rowed by two or four men, but carries a mast and two sails.

PANT or Punt, amongst the Mahrrattas an officer of the state; in the times of the Peshwas, Pant-Pratinidhi meaning representation of the raja, i.e. viceroy.

PANTENUS, a Christian missionary who penetrated into India in the 2d century. He found and brought to Alexandria, on his return, a copy of the Hebrew Gospel of Matthew, which had apparently been taken there by the apostle Bartholomew.—*Indian Antiquary*, October 1873.

PANTHAY, a Muhammadan sect in the province of Yunnau, in the south-west of China. It is a colloquial corruption from Puthee, which distinguishes Muhammadans from other religions in Burma. The Burmese call them Quayzee, meaning a foreigner. Mr. J. W. S. Wylie erroneously conjectured it to be the same as Hoai-Hoi, the term applied by the Chinese to all Muhammadans, Hoai (Muhammadan) zae (independent). Hoai-zae means Muhammadans independent of Chinese authority. In 1855 they established their independence in Yunnan; but for a few years only. In 1872 they sent an embassy to England. They are a tall, strongly-built, fair-skinned race, with a type of face differing distinctly from the Chinese. They are keen traders, very industrious and enterprising.—*Fytche in B. As. So. Jour.*, 1867.

PAN THEET YA, also Let touk, BURM.?

Vateria Roxburghiana, Wight. In Tavoy, a good, white, rough wood, useful for boat-building. *Vateria lanceolata*?—*Dr. Wallich*.

PANTHER, leopard or pard of the E. Indies; *Felis pardus*, Linn. See Felidæ.

PANTHI. HIND. The follower of any Hindu religious sect, as Aghora Panthi, Kabir Panthi.

PANTHOLOPS HODGSONII, the sous or Tibetan antelope. It rarely comes so far south as Tooskee Lake; its favourite haunts are among the lofty ranges northwards; it is met with in herds. It has two slit-like openings in the groin, forming pouches of a size capable of containing the clenched fist. They are strange appendages, and, like the infra-orbital openings, their uses are not apparent.—*Adams*.

PANTULU is the title of all Vāpari Brahmans, and is given to Teling schoolmasters. It is derived from Pandit, a learned man.

PANTUN. MALAY. Four lines of poetry. See Ber-Beit.

PANUBUR, in the Aru Islands, is a basket measure which may contain half a pikul.

PANWAR-SHADI. HIND. Amongst Hindus in Bengal, a kind of marriage of a female slave to a nominal or vagrant husband, who for a small payment will agree to wed any number of women. Cohabitation rarely follows; and the object of the arrangement is to provide a putative father for any child the woman may bear, by whomsoever begotten, and which then became the property of the owner of the female slave.

PANYALA. BENG. In Behar, the small leaves and shoots of the *Flacourtia cataphracta*, which resemble rhubarb in flavour, and are used as gentle astringents.—*Simmonds' Dict.*

PAO. LEPCHA. This is a large bamboo, the prevailing plant near the base of the Sikkim valleys; it attains a height of 40 to 60 feet, and the culms average in thickness the human thigh; it is unarmed, deep-green or purplish, and used as a large water vessel. Besides this there are nearly a dozen kinds of bamboo known to the Lepcha. Two species of hill bamboo, 'Payong' and 'Praong' of the Lepcha, replace the 'Pao' of the foot of the hills. The former flowers abundantly, the culms, 20 feet high, being wholly a diffuse panicle of inflorescence. The 'Praong' bears a round head of flowers at the apex of the lofty branches.

PAO. HIND. A quarter. Paola, quarter of a rupee. Paona or Pona, a quarter; when placed before another number, as Pon-do, or Pona-tin, it means a quarter less two or three, i.e. $1\frac{3}{4}$ or $2\frac{3}{4}$.

PAO-KIA. CHIN. Takers of a census. The official word used in the Chinese census is Yen-hu, literally fires-doors. Persons called Pao-kia, or chiefs of ten fires, are appointed to collect the numbers of their tithing.—*Yule, Cathay*, i. 117.

PAOPA-DOUNG, an isolated mountain in Burma, which the Burmese regard with some superstitious dread. They say it is impossible to ascend it, and describe it as the dwelling-place of Nats and Bilus.—*Yule*, p. 27.

PAOREE, the civil station of British Garhwal, is 5238 feet above the level of the sea.

PAPA. TEL. An ancient term for a snake.

PAPA, a rush of the Society Islands with which the finer mats are made.

PAPAA. HIND. An insect which attacks rice.

PAPAA-OMU or Areoi of the Society Islands, strolling-players, who act their drama or Aamu. Papa-Nyū (Phani-Pati), the dragon-king.—*Montgomery*, p. 91.

PAPAR. HIND. A kind of biscuit. Papargar, a maker of the papar. This is the Pappadam of the English.

PAPAVERACEÆ. Juss. The poppy tribe of plants, annual or perennial herbs, rarely undershrubs, with a milky juice, species of which may be thus shown:—

Papaver somniferum, L., Mores, Egypt, E. Indies.

Var. (a) album, flowers and seeds white.

(b) nigrum, flowers purple, seeds black.

P. Persicum, Lindl., Persia.

P. amenum, Lindl., N. India.

P. glabrum, Royle, Himalaya.

Argemone Mexicana, Linn., all India.

PAPAVER SOMNIFERUM. Linn. Poppy.

Var. (a) with white seed.	Var. (b) with black seed.
Khash kash aswad, ARAB.	Banga-pion, . . . MALAY.
Pasto, BENG.	Bunga madat, . . . "
Mukon, GR.	Khash-khash, Kunar, PERS.
Koknar, Post, . . . HIND.	Chosn, SANSK.
	Kasakasa, . . . TAM, TEL.

This very important plant, one of the Papaveraceæ, a native of the south of Europe and Asia Minor, was well known to the Greeks, and was cultivated at very early periods on account of its seeds. (Theophr. lib. ix. cap. xiii. ed. Bodæus and Staple, p. 1097.) Some authors have been of opinion that it is the *μῆκων* of Dioscorides, and that the kind with black seeds was called *αἰγρία*, and that with white seeds *ἡμίρος*; and that it is the juice of this plant which Hippocrates recommends under the name of *ὀπὸν*; *μῆκωνος*, or juice of the poppy. Pliny (xx. c. 18) uses opium to express the inspissated juice of the poppy. Sprengel, in his Hist. Rei Herb. i. p. 176, quotes Diosc. lib. iv. c. 65, as referring to *Papaver somniferum*, and to *P. Rhœas*; but in his edition of that author (ii. p. 600) he mentions only the latter plant; hence we may infer that he conceives the former to have been unknown, as he nowhere else mentions it. It was early cultivated in Egypt, in India, Persia, and Asia Minor, as well as in some parts of Europe. The garden poppy is probably a native of Persia. The dark red-flowered and black-seeded was called by Gmelin, *P. somniferum*; and the white-flowered with white seeds, *P. officinale*. It is cultivated in Turkey, Asia Minor, Egypt, Persia, India, and China, on account of its inspissated juice, the opium of commerce. The cultivation of the poppy is very simple, though the weeding requires care, and the plants must not be crowded too much together. They are carefully watered and manured, the watering being more copious as the period of flowering approaches, and until the capsules are half-grown. The capsules are employed in medicine for the preparation of a sedative decoction and syrup, much used for children. They are devoid of odour, of slightly bitter taste. If collected before the concrete juice is removed, the capsules contain a minute portion of all the active principles of opium; for medicinal purposes those should be rejected which are marked with longitudinal and parallel cuts resulting from the extraction of opium. An infusion of poppy heads in cold water should strike a red colour with permuriate of iron.

Poppy seeds yield by expression 56 per cent. of

a bland and very valuable oil, of a pale golden colour, fluid to within 10 degrees of the freezing point of water, sp. gr. .939; it dries easily, is inodorous, of agreeable flavour, is partially soluble (8 in 1000) in alcohol, dissolves the oxides of lead. For all pharmaceutical purposes, this oil is equal to that of the olive employed in European pharmacy. About 30,164 tons of poppy seeds, value Rs. 39,04,065, are annually exported from India, chiefly to France and Britain. Opium is an important article of commerce, and is extensively used in medicine and as a luxury.

PAPAW TREE, the Carica papaya, the Bati of the Malays, is not the pawpaw of the Mississippi valley, Porcelia triloba, but is the pawpaw of South America and the West Indies, one of the Papayaceæ. Europeans call it papaya, from the Portuguese papayo, and by the Portuguese it was probably introduced into India. The fruit resembles a melon in appearance, and often tastes no better than a good English turnip. It is eaten raw, also after being cooked. The leaves have saponaceous properties, and are used in tropical America in the absence of soap. Both leaves and fruit act in a hitherto unexplained way upon the animal fibre, and make the toughest meat tender, if either boiled with portions of them, or even wrapped up in the leaves, or if fowls be fed on the seeds. The seeds have a mustard-like pungency, and are an efficient vermifuge.—*Mason; Williams; Seaman.*

PAPCONDAR. Through a pass in the gneiss mountain of Papcondah, the Kistna river enters the plains of the eastern coast. In this district the sandstone re-appears, at an elevation little above that of the sea, but basaltic hills, several hundred feet in height, in which marine fossils have been discovered, exist almost within the delta formed by its sediment.

PAPENBERG, an island of Japan, notorious as the spot where many Portuguese and Japanese Christians were barbarously martyred.—*Hodgson's Nagasaki*, p. 33.

PAPER.

Warak, Kartas, AR., TAM.	Kaghuz,	PERS.
Papir,	Papoi,	PORT, SP.
Papier,	Bumangna,	RUS.
Carta, Charta, . IT., LAT.		

Paper of various qualities is made throughout all the countries in the south and east of Asia, and is used for writing on and for many economic purposes in all parts of British India, Further India, China, and Japan. In Western India, paper is made at Ahmadabad, Surat, Dharwar, Kollapur, and Aurangabad; that made at Aurangabad bears the palm as to fineness and gloss, hence the demand for it in native courts of India, to engross sunnuds, deeds, and other such documents; and the Bahadur khani and Madhagari paper of Dowlatabad are famed. For courtly use grains of gold-leaf are mixed with the pulp, and thus become spread over the surface of the paper, called Afshani Kaghaz. China, up to the year 1840, largely supplied India with paper; and there are now, 1883, in British India, many small establishments making inferior papers, with five or six worked by steam. But after the middle of the 19th century, paper for the writing and printing purposes of Europeans, and also, too, of most of the natives, was all imported into India from France and Great Britain. Muhammadans and the

Hindus in India, who use an Indian ink, still largely write on a glazed paper, the manufacture of India. The British Indian Government, during Sir Charles Wood's (Lord Halifax) position as Secretary of State for India, ordered all supplies to be purchased in Great Britain, and that order threw back many trades and caused great financial losses to the Indian Government. The manufacture of paper as a writing material was a comparatively late discovery. A paper was manufactured at a remote period in Egypt from the papyrus or paper-reed, a plant growing freely on the banks of the Nile. A manufacture of paper from the bark of trees and other substances existed also in China from a very early date; but among the nations of antiquity, before the introduction of paper, such substitutes were used as lead, copper, brass, bricks, clay, and stone, on which national edicts and records were written or engraved; or tablets of metal, wood, wax, and ivory, skins of fishes, intestines of serpents, backs of tortoises, bones of animals, and the inner bark and leaves of trees for ordinary purposes. Indeed, there are but few sorts of plants that have not been used for making paper and books, and hence have arisen the terms biblos, codex, liber, folium, tabula, tillura, philura, scheda, patta, etc., which express the several parts of the plants that were written on. The use of these was greatly discontinued after the invention of papyrus and parchment, but they are still used in many parts of the world. The Egyptian papyrus was made by laying thin plates of bark, taken from the middle of the paper-rush, side by side, but close together, on a hard smooth table; other pieces of the same size and thinness were then laid across the first at right angles; the whole was moistened with the water of the Nile, which was supposed to have some agglutinating property (though this probably resided in the plant itself), and pressure was then applied for a certain number of hours. Thus a sheet of paper was formed which required no other finishing than rubbing and polishing with a smooth stone, or with a solid glass hemisphere, and drying in the sun. This very simple process was rather a preparation of a natural paper than a manufacture, properly so called, and is practised to the present day in Nepal, Chinese Tartary, China, Japan, and the Pacific Islands, with the inner barks of the paper mulberry, for making clothing and paper materials.

Tus or Tuz is a birch bark upon which, in addition to leather, we learn that the ancient Persians wrote, and it seems also to have been anciently used in North India. In Hiwen Thsang's time (A.D. 629-645), the early Buddhist scriptures of Kasyapa's council were written on the leaves of the Tala and other palms, which are still largely used in all Southern India, Ceylon, Burma, and Siam, for account keeping, records, and books; and it is traditionally recorded that many of the writings of Mahomed were on the blade-bones of sheep.

The Chinese, however, affirm that at the beginning of the Christian era they discovered the means of manufacturing paper from pulp. Before that invention they used to inscribe written characters on strips of bamboo, or sheets of metal, using a style or pen of iron for the purpose of marking the characters; and before their art of paper-making had arrived at

perfection, they wrote upon white silk or cotton with a bamboo pen, which was found more convenient than writing either on strips of bamboo or sheets of metal, as the silk or linen could be folded into a small compass.

Anciently, in China, bamboo leaves scorched before a flame were also used to write upon, and bamboos contribute largely to the manufacture of the finished article of the present day. In the times of the Ts'in and Han monarchs, coloured threads of silk were used to record events, and the Chinese written character in constant use still retains the radical for silk. In the reign of the Han emperor Ho-ti, the bark of certain trees came into use, being boiled to a pulp, along with silk, old fishing nets, and hemp fibres, to make a paper which came into general use. Then, as now, the materials employed varied greatly according to the locality. The use of printing-blocks in China, in the 6th century after Christ, led to the extensive making of paper, in which the Chinese have ever since continued to excel. The delicacy of their best proof-paper, forming the original 'India-proof' of former days, the elegance, cheapness, and general use of their commonest stationery materials, are amongst the most satisfactory proofs of their civilisation. So early as the year 900 A.D., three kinds of paper were produced in Japan, viz. Ma-shi from hempen rag pulp; Hi-shi from the gam-pi (*Wickstroemia canescens*) and other plants; and Ko-ku-shi made from Ko-zo (*Broussonetia papyrifera*), which is like that now in use in Japan, and it is also made there from the *Edgeworthia papyrifera*.

The manufacture of the Chinese extended to the making of sheets of paper from old rags, silk, hemp, and cotton, and has been supposed to have been the source whence the Arabs obtained their knowledge of paper-making. The latter people undoubtedly introduced into Europe, in the earlier half of the 12th century, the art of making paper from cotton, and established a paper manufactory in Spain. In 1150, the paper of Xativa, an ancient city of Valencia, had become famous, and was exported to the east and west; and when some Christian labourers obtained the management of the mills of Valencia and Toledo, the different processes of the manufacture were greatly improved. Cotton paper became general at the close of the 12th and beginning of the 13th centuries, but in the 14th century it was almost entirely superseded by paper made of hempen and linen rags. The paper made of cotton was found not to possess sufficient strength or solidity for many purposes; a very strong paper was therefore made of the above substances, not weakened by bleaching, according to the present mode, which, by removing the natural gum, impairs the strength of the vegetable fibre. Some of these old papers, from having been well sized with gelatine, are said to possess their original qualities even to this day. The manufacture of paper from linen rags became general in England, France, Italy, and Spain in the 14th century. The first German paper-mill was established at Nuremberg in 1390. English manuscripts on linen paper date as early as 1340. It was made in England A.D. 1250, and in the Bartolomæus of Wynkyn de Worde (1496) it is stated that paper of a superior kind was made for that work by John Tate, jun., at his mills in Stevenage, Hertfordshire. In 1770,

the manufacture of fine paper was established at Maidstone, in Kent, by a celebrated maker, J. Whatman, who had worked as a journeyman in some of the principal paper-mills on the Continent. Not long before this, wove moulds had been invented by Baskerville, to obviate the usual roughness of laid paper, and these, attracting attention in France, led to the improvements which characterized the vellum paper of that period. Holland, too, contributed its share to the advancement of this manufacture, by inventing cylinders with steel blades for tearing the rags, and thus facilitating their conversion into pulp, which by the old method of stampers only, was a very slow and defective process. In 1799, the first attempt to produce paper in an endless web was made in France by a workman in the employ of M. Didot. The invention was brought to England by M. Didot in 1801, and made the subject of patents, which in 1804 were assigned to the Messrs. Fourdrinier. The invention was perfected at Tewin Water, in Hertfordshire, at a cost of £60,000. Their patent right was, however, invaded, and they lost a considerable sum of money due to them from the imperial treasury of Russia, though, to enforce his claim, Henry Fourdrinier, at the age of seventy-five, with his daughter, made a special journey to St. Petersburg. The Fourdriniers then petitioned the British Government, the revenue having benefited half a million a-year by their inventions, when their claim was meanly recognised by a parliamentary vote of £7000; on which the paper-makers resolved to purchase by subscription annuities for the surviving patentee and his two daughters; but ere this was done the father died, in his eighty-ninth year, and his two surviving daughters received small pensions from the Crown.

The subject of water-marks assists in elucidating the history of paper-making, and the mark of the manufacturer has often been found of use in detecting literary forgeries and frauds in the falsification of accounts. One of the oldest water-marks in existence is an open hand, whose middle finger is connected by a straight line or stem with a star. This appears on a sheet of paper of the manufacture of Flanders, which at that time supplied all the paper needed for the correspondence of England. Upon a sheet of paper is written a letter, preserved in one of the museums at Venice, which was addressed to Francesco Capello, by king Henry VII., from 'our manor of Woodstock,' on the 20th of July 1502. Mr. Herring, however, states its introduction at 1530, adding that it gave the name to 'hand' paper. Note-paper once bore a tankard, but it had since the royal arms in a shield without motto or supporters. Post was marked with a postman's horn in a shield with a crown; Copy had a fleur-de-lys only; demy and several larger sorts, a fleur-de-lys in a crowned shield; royal, a shield with a bend sinister, and a fleur-de-lys for crest. Mr. Herring traced the term cap to the jockey cap, or something like it, in use when the first edition of Shakespeare was printed. The date given to foolscap in the *Archæologia* xii. is 1661, and the traditional story related of its origin is that, when Charles I. found his revenues short, he granted certain privileges, amounting to monopolies, and among these was the manufacture

of paper, the exclusive right of which was sold to certain parties, who grew rich and enriched the Government at the expense of those who were obliged to use paper. At this time all English paper bore in water-marks the royal arms. The Parliament under Cromwell made jests of this law in every conceivable manner, and, among other indignities to the memory of Charles, it was ordered that the royal arms be removed from the paper, and the fool's cap and bells substituted. These were also removed when the Rump Parliament was prorogued; but paper of the size of the Parliament's journals still bears the name of 'foolscap.'

Mr. Herring relates that the practice of blueing the paper-pulp had its origin in an accidental circumstance. About the year 1790, at a paper-mill belonging to Mr. Buttenshaw, his wife was superintending the washing of some fine linen, when accidentally she dropped her bag of powder-blue into some pulp in a forward state of preparation, with which the blue rapidly incorporated. On Mr. Buttenshaw's inquiring what had imparted the peculiar colour to the pulp, his wife, presuming that no great damage was done, took courage, and confessed the accident, for which she was afterwards rewarded by her husband, who, by introducing to the London market the improved blue cake, obtained for it an advance of four shillings per bundle.

In paper-making by machinery, the pulp is first made to flow from the vat upon a wire frame or sifter, which moves rapidly up and down. Having passed through the sifter, the pulp flows over a ledge in a regular and even stream, and is received upon an endless web of wire-gauze, which moves forward with a shaking motion from side to side, assisting to spread the pulp evenly, and allowing the water to pass through the wire, by which means the pulp solidifies as it advances. Before the pulp quits the plane of the wire, it is pressed by a roller covered with felt, and is then taken up by an endless web of felt, which, gradually moving forward, absorbs a further portion of the moisture. It is again pressed between rollers, and, after being passed over cylinders heated by steam, it is cut by machinery into sheets. Thus in two or three minutes, the pulp, which is introduced upon the web at one extremity of the machine, is delivered at the other in the state of perfect paper. By this process 25 square feet can be made in one minute, or 15,000 square feet in a working day of ten hours.

Paper can be made from multitudinous vegetable substances, but only profitably from a few. It is manufactured in China from various materials, each province or district having its own peculiar manufacture. In that country, Ho-chi is rice-straw paper used for sacrificial burnings. Pi-tsze is the mulberry bark paper, which has been long used in the Hankow Mission Hospital as a substitute for lint and old rag. It comes from Wu-chang-fu and Yun-yang-fu in Hu-peh. Wan-tsai hien, Fung-sin hien, and Lin-chang hien, all in Kiang-si, make a paper, called Piau-sin, used for packing. Lin-yang hien, in Hunan, also supplies this article. Hwa-tsien paper from Fuh-kien and Sin-changhien (Kiang-si) is a rough paper for packing up drugs in. Hwang-pian paper, made in Kwang-sin-fu (Kiang-si) is the same as the Ho-chi, used in burning for the

dead. Ta-tsch, Chung-tsch, made in Kwang-sin-fu, are used for account books. Mau-pien and Lien-chi are fine papers made in Northern Fuh-kien and in Yuen-shan hien (Kiang-si), and used for writing, printing, and mounting pictures or scrolls. Kai-lien-chi is a good yellow thin paper, useful for wrapping up powders in dispensary practice. Lah-tsen is a waxed note-paper. Seven-lined and eight-lined paper, divided by perpendicular red lines, and stamped with curious coloured devices, are sold everywhere in great variety at small cost. In Foh-kien province, paper is made from young soft bamboo; in the province of Che-kiang it is made from paddy straw; in the province of Kiang-nan it is made from the refuse silk, and this paper is very fine and delicate, being highly valued for writing complimentary inscriptions upon. To size the paper and render it fit for ink, they make a glue, somewhat similar to isinglass, from fish bones; these they chop up very small, and soak the mass in water, which is continually renewed; when all oily impurity is extracted, they add a due proportion of alum, which has been dissolved. Over the vessel in which this mixture is, a rod is laid, a cleft-stick is used for holding the sheet of paper during the process of dipping; as soon as the paper has been sufficiently saturated, it is withdrawn by gently rolling it round the stick which has been laid over the vessel; the sheet of paper is afterwards hung to dry either near a furnace, or in the sun. They employ a vast variety of fibrous substances for this manufacture, and apply paper to a variety of uses little thought of in other countries. They make up an infinite variety of kinds, from the coarse, heavy, half-inch thick touch-paper for retaining a slow, enduring fire, to the beautiful so-called India paper suited for the finest proof engravings. In the tea-chests there is a lavish use of many thicknesses of paper. If a hut or boat is leaky overhead, the bed is protected by a large sheet of oiled paper. If a shop-keeper wants to tie up a parcel, he seizes a strip of tough paper, and by rolling it on his thigh at once converts it into a strong pack-thread; and even a torn sail is at times patched with tough paper. In China it is the cheapest of materials in daily use, and the manufacturers are very numerous. They make it of rice-straw, wheat-straw, cotton, hemp, of young bamboos, of different fibres, and of the barks of the paper mulberry, *Broussonetia papyrifera*, also of the *Ailanthus* and other trees, and of the refuse of the silk cocoon, showing that the inventors of the art make use chiefly of unwoven fibres, though they also employ refuse cloth and silk, etc.

The paper on which the Honourable Mr. Morrison's book was printed, was manufactured from the common yellow bamboo paper of the Chinese, by sizing it in water saturated with alum, to which glue was added; and the sheets dried and smoothed by rubbing them on a warm wall. The glazing upon Chinese writing paper is made by waxing the sheet, and afterwards rubbing it with a smooth stone; two, three, and four sheets are made into one thick sheet for ledgers or other account books, by the same process, after wetting the inner surfaces with glue water, and drying the sheet in the sun. There is also a thin paper called Nankin paper, which is manufactured from cotton wool, that is tougher and more flexible than

the bamboo paper. Coloured paper is exported in considerable quantities; the exportation of all kinds is principally to India and the Archipelago. In China itself the consumption of Chinese writing paper is great, on account of its not being injured by the climate, foreign paper sized with glue being liable to spoil.

The making of paper in China from the bamboo is carried out somewhat in the following manner:—After being soaked for some time in water, the bamboos are split up and saturated with lime and water, until they become quite soft. They are then beaten up into a pulp in mortars, or, where water-power is at hand, as in the hilly districts, the beating or stamping process is done by means of stampers, which rise and fall as the cogs which are placed on the axis of the water-wheel revolve. When the mass has been reduced to a fine pulpy substance, it is then taken to a furnace and well boiled, until it has become perfectly fine, and of the proper consistency. It is then formed into sheets of paper of various degrees of fineness, according to the purposes for which it is intended. It is not only used for writing upon and for packing with, but a large quantity of a coarse description is made for the sole purpose of mixing with the mortar used by bricklayers.

With the *Broussonetia papyrifera*, the following is the process adopted by the Chinese:—The small branches are cut by them in lengths of about 3 feet, and boiled in an alkaline ley for the sake of loosening the inner rind or bark, which is then peeled off and dried for use. When a sufficient quantity has been thus laid up, it is again softened in water for three or four days, and the outer parts are scraped off as useless; the rest is boiled in clear ley, which is kept strongly agitated all the time, until the bark has become tender and separates into distinct fibres. It is then placed in a pan or sieve, and washed in a running stream, being at the same time worked with the hands, until it becomes a delicate and soft pulp. For the finer sorts of paper, the pulp receives a second washing in a linen bag; it is then spread out on a smooth table, and beaten with a wooden mallet, until it is extremely fine. Thus prepared, it is put into a tub with a slimy infusion of rice and a root called *oreni*; then it is stirred until the ingredients are properly blended; it is next removed to a large vessel to admit of moulds being dipped into it. These moulds are made of bulrushes cut into narrow strips and mounted in a frame; as the paper is moulded, the sheets are placed covered with a double mat. The sheets are laid one on the other, with a small piece of reed between, and this, standing out a little way, serves afterwards to lift them up leaf by leaf. Every heap is covered with a board and weights to press out the water; on the following day the sheets are lifted singly by means of the projecting reeds, and are placed on a plank to be dried in the sun. This paper is so delicate that only one side can be written on, but the Chinese sometimes double the sheets, and glue them together so neatly, that they appear to be a single leaf.

In Japan, in December, after the tree has shed its leaves, they cut off the branches about 3 feet in length, and tie them up in bundles. They are then boiled in a ley of ashes in a covered kettle, till the bark is so shrunk that half an inch of the wood may be seen projecting at either end of the

branch. When they have become cool, the bark is stripped off and soaked in water three or four hours until it becomes soft, when the fine black skin is scraped off with a knife. The coarse bark is then separated from the fine. That of the new branches makes the finest paper. The bark is then boiled again in fresh ley, continually stirred with a stick, and fresh water from time to time is added. It is then put in a sieve and taken to a brook, and here the bark is incessantly stirred until it become a fine pulp. It is then thrown into water, and separates in the form of meal. This is put into a small vessel with a decoction of rice and a species of *Hibiscus*, and stirred until it has attained a tolerable consistence. It is then poured into a large vessel, from whence it is taken out and put in the form of sheets on mats or layers of grass straw; these sheets are laid one upon another with straw between, and pressed to force the water out. After this, they are spread upon boards in the sun, dried, cut, and gathered into bundles for sale. This paper will better endure folding, and last longer, than that made in Europe; is used to form the walls of rooms, and the fans in universal use; it is used as wrapping paper, and forms the string to tie it; in square pieces it is used as pocket-handkerchiefs, and pressed together and lacquered is worn as hats. This paper is of every consistency, but always tough. The youngest branches form the whitest paper. It is impossible to tear this paper against the grain. It is of different qualities, and some of it is as soft and flexible as cotton cloth. Indeed, that used for handkerchiefs might be mistaken for cloth, so far as toughness and flexibility are concerned. Paper of Japan is applied also in lieu of glass on the sliding walls of the houses, for pocket-handkerchiefs, for napkins, tablecloths, waistcoats, and other articles of wearing apparel.

Nepal paper is manufactured almost exclusively in Nepal from the bamboo. After being cut, it is beaten in wooden mortars until reduced to a pulpy mass, then thrown into a vat of water, the impurities separated, and when of a proper consistence, it is spread on linen to be dried; the surface is rendered smooth by friction, and with a pebble on boards. Its structure is very tough, and cannot be torn rectilinearly, and it is most serviceable for filtration, as the fibres do not separate readily when saturated with moisture, and will resist in a moist condition considerable rough handling.

The Nepal paper plant is the *Daphne cannabina*, one of the *Thymalacæ*. At the Great Exhibition of 1851, many visitors were much interested about a huge sheet of Nepal paper exhibited by Colonel Sykes. Mr. Hodgson (*Journ. As. Soc.* i. p. 8, 1832) and Dr. Campbell describe the process of making paper from the *Daphne cannabina* as consisting, first, in boiling slips of the inner bark of the paper plant in a ley of wood-ashes for about half an hour, by which time the slips will be quite soft. These are then beaten in a stone mortar with a wooden mallet till they are reduced to a homogeneous pulp. This is then diffused through water, and taken up in sieves and paper frames, as in the ordinary process for making paper by hand. When dry, the sheet of paper is folded up; sometimes it is smoothed and polished by being rubbed on wood with the convex side of a chank shell. Though called Nepalese, the paper

is not manufactured in Nepal, but in Cis-Himalayan Bhot, in the midst of its immense forests, where there is an abundant supply of the plant, of wood for ashes and for firewood, as well as a constant supply of clean water. This paper is remarkable for its toughness, as well as its smoothness. Some of it, in the form of bricks of half-stuff, was sent to England previous to the year 1829. As the quantity sent was not sufficient for a complete experiment, a small portion of it was made into paper by hand. An engraver, to whom it was given for trial, stated that 'it affords finer impressions than any English-made paper, and nearly as good as the fine Chinese paper which is employed for what are called India paper proper' (Gleanings in Science, i. p. 210). Dr. Campbell describes the paper made by the hand 'as strong and durable as leather crust, and quite smooth enough to write on, and, for office records, incomparably better than any Indian paper. Many of the books in Nepal, written on this paper, are said to be of considerable age, and the art of making paper seems to have been introduced about 500 years ago from China, and not from India.' Colonel Ramsay, Resident at the court of Nepal, describes the daphne as a small evergreen perennial shrub, somewhat like a laurel, which bears poisonous berries. There are several species of it in Nepal, from all of which, he was told, paper is made. In some kinds the flowers are pure white, in others dirty white, tinged with pink or purple. There is an impression in the plains of India that the Nepal paper is prepared with arsenic. This, he says, is quite a mistake, for arsenic is not allowed to be sold here, nor any other virulent poison, under a heavy penalty. The whole tribe of plants bearing the name of daphne are more or less poisonous, but the daphne paper cannot retain the poisonous quality of the plant, as rats and insects often eat it with apparent avidity. This unsightly paper is tough when kept dry, and can be used like cloth for wrapping up dry substances in, and it can be used after having been saturated with water, provided it be carefully dried within a reasonable time after it has been wetted. One sheet in the Museum of the Bengal As. Society measured 50 feet by 25 feet.

The Burmese make a coarse paper from the bark of a large creeper found in the forests. The paper is thick, like pasteboard, and the surface is blackened, and written upon with a steatite pencil.

In British India, the process of paper-making appears to be very much the same throughout. The materials—gunny, old rags, waste-paper, or fibre, as the case may be—are cut up into small pieces, well soaked, and then pounded in a cistern or well, floored with chunam or stone, the pounding instrument being shod with iron, and in some cases worked like a pe-cottah. The pulp is then washed and sprinkled with lime-water, and left to stand for periods varying from three days to a week. This process is renewed two or three times. The pulp is then taken up on frames fitted with strainers, and dried.

These frames are generally made so as to hold each one sheet, and each sheet when sufficiently coherent is hung or fixed against a wall to dry. It is then rubbed over with thin paste made of rice-flour and water, again dried, and afterwards

pressed. The process is usually completed by glazing, which is done in some cases by rubbing each sheet with an oiled stone roller.

In Europe, down to the beginning of the 18th century, cotton, flax, and hemp were the usual materials, except rags, used in the manufacture of paper. Cotton and linen rags are now chiefly used for this purpose, because they are more easily and cheaply converted into pulp, and furnish a better article when finished than other fibrous materials. But the comparatively high price of rags, and the enormous demand for cheap paper, have compelled manufacturers to turn their attention to other sources of supply, and efforts are being unceasingly made to manufacture paper from the fibres of different vegetable substances.

It is objected by manufacturers of paper that pulp from unwoven fibres does not draw through the present machinery so well as that made from rags. A modification of machinery would no doubt remedy this. But new materials involve new machinery for reducing them to pulp, and the older paper-makers have not yet established machinery suited for these new materials in addition to that at present in use. Enterprising men are laying themselves out to make pulp or half-stuff for sale to the paper-makers, and it will be by those men that any new materials will be worked. Many thousands of inventors and manufacturers, many years of incessant labour, and millions of pounds sterling have been expended in experiments upon wood, straw, and similar substances; but the problem of obtaining good paper, at a moderate cost, from raw vegetable fibre, is yet only partially solved. Neither straw, nor wood, nor any similar material has superseded linen and cotton rags. The raw fibre of papyrus was used for thirteen centuries; the reign of rags has lasted twelve and a half centuries. The most practical of the substitutes seems to be straw, the first useful paper from which was made in 1800, and used in a book printed by Burton of London, a copy of which was presented by the Marquis of Salisbury to king George III. The work is entitled *An Historical Account of Substances used in Paper-making*. Cobbett, in 1828, employed, experimentally, some paper made from the husks of Indian corn, but with little success. The substitution of straw in 1800 was regarded of great national importance, and highly deserving support. It was neglected for many years, but straw is now extensively used in paper-making in England, and on the Continent of Europe.

A book written in German by M. Schaffers so long ago as 1772 (*Sammtliche Papierversuche von Jacob Christian Schaffers, Prediger zu Regensburg, Regensburg 1772*), contains sixty specimens of paper made from the bark of the willow, beech, aspen, hawthorn, lime, and mulberry; from the down of the asclepias, the catkins of black poplar, and the tendrils of the vine; from the stalks of nettle, mugwort, dyer's weed, thistle, bryony, burdock, clematis, willow herb, and lily; from cabbage-stalks, fir-cones, moss, potatoes, wood-shavings, and sawdust; and it has been likewise made from rice, hop-bine, liquorice-root, the stalks of the mallow, and the husks of Indian corn. M. Bardoux, a manufacturer of Poitiers, manufactured paper from oak, walnut, pine, and chesnut. The question of the present day therefore is not, 'of what vegetable substances can

paper be made? but 'which of them can compete with rags?'

In a memorandum, drawn up by Dr. J. Forbes Royle, on the materials for paper-making procurable from India, he reviewed the entire unutilised and utilised fibrous plants of India. Several bales of the straw of certain Indian grasses were forwarded to the Society of Arts, but the report of competent judges was that none of them are well adapted for the making of paper, though they did not doubt that paper can be made from all of them. The common rice-straw (*Oryza sativa*) was the best. They added that all the samples are very inferior in paper-making quality to many substances which can be obtained readily in England, but which are not even considered as worth using.

In Africa, besides the esparto grass and the bark of the *Adansonia*, there is a fibre-producing plant called diss-grass, which can be obtained in such quantities and at such a price as may render it a useful luxury. The dwarf palm can be obtained in almost any quantity in Algeria, but the cost of collection is rather more than that of esparto, as each leaf is picked separately, and its manufacture into paper is more difficult and expensive, the texture of the fibre varying in different parts of the leaf, one portion of which contains some yellowish wax or resin, extremely difficult of kill, and almost impossible to detect till it is discovered on the hot rollers, and the paper is spoilt. The rivers of South Africa are in many places choked with a plant known as the palmete, a kind of large rush, 8 to 10 feet in height, of which large quantities can be obtained, and which in all probability will be found of use in the fabrication of ropes and paper.

Mr. Liotard and Baron F. von Mueller have given lists of plants from which paper could be made, and the following of the East Indies are obtained from their writings:—

Abelmoschus esculentus, *W. and A.*, esculent okro.
Abutilon Indicum, *G. Don*, country mallow.
Acacia Arabica.
Adansonia digitata, *Linn.*, baobab.
Agave Americana, *Linn.*; *A. cantala*; *A. diacantha*; *A. variegata*; *A. vivipera*, *Linn.*; and *A. yuccæfolia*.
Ailanthus, *sp.*
Aloe Indica, *Royle*; *A. perfoliata*, *Roxb.*; and *A. vulgaris*, *Lam.*, Barbadoes aloe.
Althea, *sp.*
Ananas sativus, *Schult.*, pine-apple.
Anatherium muricatum, *Beauv.*, cuss-cuss grass.
Apocynum, *sp.*
Aralia papyrifera.
Arang of Berar.
Areca catechu, *Linn.*, betel-nut palm.
Aristida setacea.
Arundo karka.—?
Bambusa arundinacea, *Willd.*; *B. gigantea*; and *B. vulgaris*.
Baree, a grass of Sind.
Bauhinia racemosa, *Lam.*; *B. tomentosa*, *Linn.*; and *B. Vahlil*, *W. and A.*
Betula bhojputra.
Boehmeria nivea, *Hooker*; rhea; China grass.
Bonapartea juncoidea of Australia.
Borassus flabelliformis, *Linn.*, palmyra.
Broussonetia papyrifera, *Vent.*, paper mulberry tree.
Butea frondosa, *Roxb.*, pulas tree.
Cajanus Indicus, *Sprenger*, pigeon pea.
Calotropis gigantea, *R. Br.*; *C. Hamiltonii* and *C. procera*, *R. Br.*
Camelina, *sp.*
Cannabis sativa, *L.*, hemp.
Careya arborea, *Roxb.*

Caryota urens, *Linn.*, bastard sago.
Chamarops Ritchiana.
Chikli of Berar.
Chlorogalum, *sp.*
Cocos nucifera, *Linn.*, coconut tree.
Conocarpus latifolius, *Roxb.*
Conocephalus niveus —? *C. globulifer*, *Bennett*; *C. naucleiflorus*.
Corchorus capsularis, *Linn.*, jute, ghi-nalla pat; *C. olitorius*, *Linn.*, jute, Jew's mallow.
Cordia latifolia, *Roxb.*, broad-leaved sepietan; and *C. myxa*, *Linn.*, sepietan.
Crotalaria Burhii —? *C. juncea*, *Linn.*, sunn-hemp; *C. Leschenaultii* —? and *C. tenuifolia*, *Roxb.*; Jubbulpur hemp.
Curcuma, *sp.*, leaves.
Cyperus textilis and *C. variegata* —?
Damia extensa, *R. Br.*
Daphne oleoides —? *D. papyracea*, *Wall.*, Nepal paper shrub; and *D. cannabina*.
Dendrocalamus strictus, *Nees*, and *D. torda*, *Nees*.
Desmodium tiliaefolium, *D. triflorum*, *Dec.*; and *D. argenteum*.
Edgeworthia papyrifera.
Eleocharis tuberculatus.
Eleusine coracana, *Gært.*
Erinocarpus Nimmonii.
Eriodendron anfractuosum, *Dec.*
Erythrina Indica, *Lam.*, Indian coral tree.
Eugenia, *sp.*, tha-byay of Burma.
Fatsia, *sp.*
Ficus Bengalensis, *Linn.*; *F. elastica*, *Roxb.*; *F. glomerata*, *Roxb.*; *F. racemosa*, *Linn.*; and *F. religiosa*, *Linn.*
Fourcroya, *sp.*
Girardinia heterophylla, *Dalz.*, Neilgherry nettle.
Gmelina arborea, *Roxb.*
Gossypium, *sp.*, *G. Indicum*, etc., cotton.
Grewia oppositifolia, *Buch.*
Hampu, a creeper of Coorg.
Hardwickia, *sp.*
Helianthus, *sp.*
Hibiscus cannabinus, *Linn.*; *H. furcatus*, *Roxb.*; *H. esculentus*; *H. mutabilis* —? *H. rosa Sinensis*, *Linn.*; *H. sabdariffa*, *Linn.*, roselle; and *H. Suratensis*, *Linn.*
Hydrangea, *sp.*
Hymenodictyon excelsum, *Wall.*
Isora corylifolia, *Schott. and Endl.*
Kasdo, a Sind grass.
Kevan, of Ratnagiri, made into ropes.
Kherdo, a Sind grass.
Lavatera, *sp.*
Lepidosperma, *sp.*
Leptadenia Jacquemontiana —?
Linum usitatissimum, *Linn.*, flax.
Lygeum, *sp.*
Madid of Belgium.
Malachra capitata, *Linn.*
Maoutra, *sp.*
Marsdenia tenacissima, *R. W.*
Morus Indica, *Linn.*, mulberry.
Musa paradisiaca, *Cavendishii*, coccinea, glauca, Nepalensis, ornata, superba, and textilis.
Opuntia Dillenii, *Haw.*, hedge prickly pear.
Orthanthera viminea, *Royle*.
Oryza sativa, *Linn.*, rice-straw.
Oxytropis, *sp.*
Pachyrhizus, *sp.*
Pandanus odoratissimus, *Linn. f.*, screw pine.
Parkinsonia aculeata.
Phoenix dactylifera, *Linn.*; *P. farinifera*, *Roxb.*; and *P. sylvestris*, *Roxb.*
Phormium, *sp.*
Phrynium dichotomum.
Pimeloa, Neilgherries lace bark.
Poa, *sp.*
Populus ciliata.
Psamma, *sp.*
Ros, Rosdo, a Sind grass.
Saccharum munja, *Roxb.*, munj; *S. officinarum*, *Linn.*, sugar-cane refuse; *S. fuscum*; *S. procerum*, *Roxb.*; *S. sara*, *Roxb.*, pen-reed; *S. spontaneum*, *Linn.*, thatch grass.
Salmalia Malabarica, *Schott. and Endl.*, red cotton tree.

Sanal of Madura. Qu. hemp.
Sansiviera Zeylanica, Willd., bowstring hemp.
Sardo of Belgium.
Sarkhad, a Sind grass.
Sesbania aculeata, Persoon; *S. cannabina*.
Sida acuta, Burm.; *S. populifolia*; *S. tillæfolia*.
Spartina, sp.
Spartium, sp.
Sponia Wightii.
Sterculia acutata, Roxb.; *S. ornata* —? *S. ramosa*;
S. urens, Roxb.; and *S. villosa*, Roxb., hemp.
Stipa, sp.
Thespesia populnea, Lam., portia tree.
Tillandsia, sp.
Triticum vulgare, Villars, wheat.
Typhora asthmatica, R. W.
Typha elephantina, Roxb.
Urena lobata, Linn.
Urtica heterophylla, Neilgherry nettle.
Whalu of Ratnagiri.
Wiketromia salicifolia and *W. canescens*.
Worang of Ratnagiri.
Yucca gloriosa, Linn.
Zea mays, Linn., maize.

Of all these S.E. Asia plants, the more promising seem to be the bamboo, the musa, jute, sunn, lint, hemp, malachra, rice-straw, wheat-straw, and calotropis, but none of them come up to rags.

The inner bark of *Corchorus* (jute) yields a paper pulp, but of inferior quality, and is bleached with difficulty; and agave and banana or plantain are not only expensive, but it is difficult to bleach them. Flax straw can be utilized, but yields only 12 to 15 per cent. of pulp; hemp produces 25 per cent.; nettles, 5 per cent. of a very beautiful and easily bleached fibre.

Palm leaves contain 30 to 40 per cent. of fibre, but are not easily bleached. The Bromeliaceæ contain from 25 to 40 per cent. of fibre; *Bonapartea juncoidea* of Australia, 25 per cent. of the most beautiful vegetable fibre known, which could be used for paper pulp, and for all fabrics in which flax, cotton, silk, or wool are employed; the plant needs no other preparation than cutting, drying, and compressing like hay. Ferns give 20 to 25 per cent. of a fibre not easily bleached; *Equisetum*, 15 to 20 per cent. of inferior fibre, easily bleached.

Althea, and many of the *Malvaceæ*, produce 15 to 20 per cent. of paper pulp. Stalks of beans, peas, hops, buckwheat, potatoes, heather, broom, contain 10 to 20 per cent. of fibre.

The straws of cereals—rice, wheat, barley, oats, and rye—cannot be converted into white paper pulp after they have ripened the grain; the joints and knots in the stalks are then so hardened that they resist all bleaching agents.

Hibiscus esculentus and *H. cannabinus* are used by the paper-makers of Dowlatabad, and Dr. Riddell suggested the roosa grass. Paper and envelopes for writing, printing, etc., are imported into India, chiefly from the United Kingdom, Austria, and France, of value nearly 50 lakhs of rupees; in 1880–81, 47,65,976 rupees.—*Tomlinson*; *Bombay Quarterly Review*, p. 265, of 1855; *Chinese Mat. Med.*; *Sirr's China*, ii. pp. 1–4; *Rev. Joseph Hunter*, *Archæologia*, xxxvii.; *John Timb's Cur. of Science*; *Royle*, Memo. May 3, 1854; *Oliphant*; *Mason*; *American Expedition to Japan*, p. 64; *Riddell's Gardening*; *Dr. A. Hunter in Madras Ex. Jur. Rep.*; *Cat. Exhib. of 1862*; *Royle's Fibrous Plants*, p. 311; *O'Sh.* pp. 279–557; *B. Hodgson in Jour. Beng. As. Soc.*, 1832, i. p. 8; *Gleanings in Science*, i. p. 210; *Royle, Arts, etc., of India*, p. 486; *Hooker, Ilum. Jour.*; *Morrison's Compen-*

dious History; *Fortune, A Res. among the Chinese*; *Mr. Liebig*; *Von Mueller*; *Stretell*; *Eng. Cyc.*

PAPER CURRENCY. The average circulation from the commencement of the Paper Currency operations in India, has been as under:—

1862-63, . Rs. 4,41,94,285	1870-71, . Rs. 9,81,32,240
1863-64, . " 5,23,25,000	1872-73, . " 12,86,40,370
1864-65, . " 6,88,20,116	1874-75, . " 10,67,04,070
1865-66, . " 7,72,57,983	1877-78, . " 13,25,02,470
1866-67, . " 8,98,93,179	1880-81, . " 13,66,29,350
1867-68, . " 9,28,50,848	1881-82, . " .
1869-70, . " 10,66,94,777	1882-83, . " .

PAPER MULBERRY. Chiu, Ch'u, Kau sang, CHIN., *Broussonetia papyrifera*, is a native of the isles of the Southern Ocean, as well as of China and of Japan. It has long been famous for its fibrous bark, which is made into a kind of cloth, as in Otaheite and in the Sandwich Islands, as well as into paper in Japan. The bark is boiled into pulp in a ley of wood-ashes, and then well washed by agitation of it in water until it becomes like tufts of tow. If too much boiled, the paper will be weak but white; and if insufficiently washed, it is coarse but strong. It is then heaped on a table, and beaten into a pulp by batons of hard wood. Mucilage obtained from boiled rice, or from a plant called *oreni*, is added to the pulp, which is stirred with a clean reed until reduced to a homogeneous liquor, and when of a due consistency it is ready for conversion into sheets.

PAPER PLANT of Nepal, the *Daphne cannabina*, is one of the same family as the lace bark tree, *Lagetta linearia*, of the West Indies. *D. cannabina* is supposed to be identical with the *D. odora* of Thunberg. It is extremely abundant in the Himalaya, and the paper is made by boiling the inner bark in a ley of wood-ashes, and reducing them to pulp by beating. *Daphne eriocephala* is very common on the Neilgherries, Western Ghats, and on the hilly parts of the Southern Mahratta country and Dekhan. On a trial of the paper by an engraver, he reported it as affording finer impressions than any English-made paper, and nearly as good as the fine Chinese paper which is employed for what are called India-paper proofs. Dr. Campbell describes the *D. cannabina* paper as strong and durable as leather.

PAPER, RICE. The rice-paper plant is the *Aralia papyrifera*, Hooker. Chinese rice-paper had long been supposed to be cut from cylinders of a pith which has always a central hollow chamber, divided into compartments by septa or excessively thin plates. The supposition was confirmed by Sir William Hooker receiving from China specimens of the rice-paper plant, which very closely resembles, in botanical characters as well as in outward appearance of size and habit, the *Aralia* plant of Sikkim. The largest specimens are about five or six feet in height, and from six to eight inches in circumference at the base, but nearly of an equal thickness all up their stem. The stems are crowned at the top with a number of palmate leaves on long footstalks, which give to the plant a very ornamental appearance. The under side of each leaf, its footstalk, and the top part of the stem, is densely covered with down of a rich brown colour. It flowers and seeds during the winter and spring months at Hong-Kong and Calcutta. The proportion of pith in these stems is very great, and from this pure white substance the beautiful rice-paper is prepared. The Chinese call this plant the Tung-ts'au. The Tung-ts'au

is largely cultivated in many parts of the island of Formosa. The Canton and Foh-kien provinces are the chief consumers, and the town of Fuchu alone is supposed to take annually not less than 30,000 dollars' worth. In the Chinese market, 100 sheets (each about three inches square), one of the most beautiful and delicate substances with which we are acquainted, are procurable for 1½d. or 1½d.

It is a delicate vegetable film, consisting of long hexagonal cells, whose length is parallel to the surface of the film, and which are filled with air when the film is in its usual state; the peculiar softness which so well adapts it for receiving colours, is owing to this structure. The pith is carefully taken out and cut in sheets, by running a knife round it, and smoothing them with an iron. When the tissue breaks, the fracture is connected by a lamina of mica. Paintings on Chinese pith-paper, or rice-paper, are much sought after for their splendid colourings. Its velvety surface contrasts admirably with brilliant colours. An India-ink outline is first transferred by damping and pressing it upon the paper, when the ink strikes off sufficiently to enable the workman to fill up the sketch; one outline will serve for limning several copies, and in large establishments the separate colours are laid on by different workmen. The manufacture of these paintings at Canton employs between two and three thousand hands. Another tissue sometimes used by the Chinese for painting, more remarkable for its singularity than elegance, is the reticulated nerve-work of grape leaves, the fleshy green part of the leaf having been removed by maceration, and the membrane filled with isinglass. The appearance of a painting on this transparent substance is pretty, but the colours do not retain their brilliancy.—*Williams' Middle Kingdom*, ii. p. 145; *Eng. Cyc.*; *M'C. Com. Dic.*

PAPIER-MACHE, a name properly applied to articles composed of paper pulp, boiled in a solution of gum or size to give it tenacity, and then pressed into moulds; though the term is also applied to trays, snuff-boxes, and other things made by glueing several plies of paper together, and then varnishing. It is made in the Panjab.—*Faulkner*.

PAPILIONIDÆ. *Leach*. The butterfly family of the order Lepidoptera, *Linn.*, comprising the genera, *Ornithoptera*, *Boisd.*; *Papilio*, *Linn.*; *Pontia*, *Fabr.*; *Pteris*, *Schr.*; *Callosone*, *Doubl.*; *Idmais*, *Doubl.*; *Thestias*, *Boisd.*; *Hebomoia*, *Hubn.*; *Eronia*, *Hubn.*; *Callidryas*, *Boisd.*; *Terias*, *Swain.* The genus *Papilio* includes all the butterflies. The insects composing it have mostly thin and elongated antennæ terminated by a club. They are all day-fliers. Their larvæ, which are variously shaped, have six pectoral, eight abdominal; and two anal feet. The pupæ are usually angulated, and, with a few exceptions, naked. The perfect insect varies in size from less than an inch across the wings when expanded to nearly a foot in breadth. Equally variable are their colouring and outlines. They are short-lived. Their powers of flight are very great, and the mode of flight varies in the several species. The males are usually more gaily coloured than the females. The Papilionidæ, swallow-tailed butterflies, from their large size and gorgeous colouring, are more frequently collected than other insects. Sikkim boasts a profusion of beautiful

insects, amongst which the British swallow-tail butterfly (*P. machaon*) disports itself in company with magnificent black, gold, and scarlet winged butterflies of the Trojan group, so typical of the Indian tropics. *Papilio Ulysses*, one of the largest of the tribe, is common at Amboyna. It flies with a rather weak, undulating motion. It is in Northern India, the Malay Islands, and S. America where these fine insects occur in the greatest profusion. In continental Asia, 65 species have been described, and 130 species in the Eastern Archipelago, from the Malay Peninsula to near New Guinea.—*Eng. Cyc.*; *Wallace*; *Hooker's Him. Jour.* See *Insects*; *Natural History*.

PAPIONINÆ, a sub-family of mammals, including the true baboons of Africa and the monkey-like baboons of India, viz.—

Inuus silenus, lion monkey.

<i>Simia leonina</i> , <i>Shaw.</i>	<i>Silenus veter</i> , <i>Gray, Horsf.</i>
<i>S. silenus</i> , <i>Linn.</i>	<i>Blyth.</i>
<i>Nil-bandar</i> , . . . <i>BENG.</i>	<i>Nalla-manthi</i> , . . . <i>MAL.</i>
<i>Siah-bandar</i> , . . . <i>HIND.</i>	

The lion monkey is a native of the more elevated forests of the Western Ghats of India, from lat. 15½° N. to the extreme south, but is most abundant in Cochin and Travancore. It does not occur in Ceylon, and though called so by Buffon, it is not the wanderoo, which is a species of presbytes. It is of a somewhat sulky and savage disposition, and is with difficulty taught to perform any feats of agility or mimicry.

Inuus rhesus, the Bengal monkey.

<i>Macacus rhesus</i> , <i>Desm.</i>	<i>Pithex cinops</i> , <i>Hodgs., Hor.</i>
<i>Inuus erythreus</i> , <i>Schreb.</i>	<i>Papio rhesus</i> , <i>Ogilby.</i>
<i>Morkot</i> , <i>Banur</i> , . . . <i>BENG.</i>	<i>Bandar</i> , <i>HIND.</i>
<i>Piyu</i> , <i>BHOT.</i>	<i>Suhu</i> , <i>LEPCH.</i>

This is the common monkey of all N. India, extending up to 4000 and 5000 feet in the Himalaya, and south to about lat. 18° or 19° N. to Gumsur and near Nagpur. It frequents all the forests and groves in the open country, and in Northern India may be seen in many towns and villages. It is very easily tamed and made to exhibit various feats of agility.

Inuus pelops, the hill monkey.

<i>Macacus pelops</i> , <i>Hodgson.</i>	<i>M. Assamensis</i> , <i>M'Clell.</i>
Occurs in Assam and Darjiling.	
<i>Inuus nemestrinus</i> of Tenasserim and Malayana.	
<i>Inuus leoninus</i> , <i>Blyth</i> , of Arakan, perhaps the same as <i>I. arctoides</i> of Is. Geoff.	

Macacus radiatus, the Madras monkey.

<i>Cercopithecus radiatus</i> , <i>Kuhl.</i>	<i>Simia sinica</i> , <i>Linn., Elliot, Blyth, Horsf.</i>
<i>Munga</i> , <i>CAN.</i>	<i>Makadu</i> , <i>MAHR.</i>
<i>Pandar</i> , <i>HIND.</i>	<i>Wanur</i> , <i>Keda</i> ,
<i>Vella-manthi</i> , . . . <i>MALEAL.</i>	<i>Koti</i> , <i>Tél.</i>

The Madras monkey is to be seen all over the southern parts of India, extending north to lat. 18° N., where it is replaced by *Inuus rhesus*; it lives in the dense jungles, also in populous towns, and carries off fruit and grain from the dealers with great coolness and address. It is the monkey most commonly met in menageries, and led about to show feats of agility. It is the most inquisitive and mischievous of its tribe.

Macacus pileatus, *Shaw*, of Ceylon, is the *Simia pileatus*, *Linn.*

Macacus cynomolgus, *Linn.*, of Burma.

Macacus carbonarius, *F. Cuv.*—*Jerdon's Mammals*.

PAPISRANG. Penang has two woods of this name, viz. one of a purple colour, a strong wood, used for beams; the other of a pale brown colour, 6 to 9 feet in circumference, 40 feet long, not good for beams, chiefly used for furniture.—*Colonel Frith.*

PAPLI CHUCKAY, TAM, yields an orange dye.

PAPPATI, the New Year's Day of the Zoroastrians, by whom it is strictly kept as a festival. It is celebrated in honour of Yezdejird. On this day the Zoroastrians rise early, dress in new clothes, and, after prayers in their households or temples, pass the day in congratulatory visits and entertainments.—*The Parsees*, p. 60.

PAPPRI, HIND. A natron salt obtained from the lake of Lunar, used in the manufacture of bangles. A substance found at one stage of the manufacture of sal-ammoniac.

PAPUAN, a Negroid race occupying New Guinea and its neighbouring islands in the Eastern Archipelago, and extending from New Guinea eastward through the Louisiade and Solomon Archipelagos to the New Hebrides, where it co-exists with some tribes of Malaya-Polynesians, and still farther to the Fiji Islands, which are the extreme limit of the race in an eastern direction.

In a direction north-west from New Guinea, a Papuan race extends through the Moluccas and the Philippines, but in these islands they only appear in small and scattered tribes, occupants of the mountain fastnesses.

The small islands which extend from New Guinea to Timor, with the exception of the Aru Islands, are occupied by Malaya-Polynesians of the most decided character; but at Timor, especially near the north-east end, a race evidently of Papuan origin again appears, but never, so far as Mr. Earl had been able to ascertain after a strict inquiry, in an absolutely pure state. These tribes were much oppressed by the Malaya-Polynesians who occupy the table-land of the interior; and the slaves which were brought down to the settlements on the coast, and were formerly exported to Macao and other places, were chiefly of this Papuan race.

Some tribes on the great island of Flores or Mangarai assume a more decided Papuan character, and there is said to be also a tribe of this race in the neighbourhood of the Timboro mountain on Sumbawa; but beyond this they disappear, and a Negro race is not encountered again until we meet them on the Malay Peninsula under the name of Semang, occupying some mountain tracts in the states of Kidah, Perah, and Kalantan. Farther west, the Andaman Islands in the Bay of Bengal are occupied by a people of most decided Negro character.

The Malayan term for crisped or woolly hair is 'rambut pua-pua.' Hence the term 'pua-pua' or 'papua' (crisped) has come to be applied to this Negro race, and expresses their most striking peculiarity. With the Mincopi of the Andamans, the Semang of the Malay Peninsula, the Alfoer and Negrito of the Philippines, they have been named Oriental Negroes, to distinguish them from the Negro race of Africa.

They were called by Mr. Muller, Mairassie, and by Lieutenant Modera, Alfoeren or Alfoer. Marsden adopted the term 'Negrito,' or 'little Negro,' from the Spaniards of the Philippines, and applied it to the entire race.

The term 'tanna papua,' or 'land of the crisp-haired,' is applied by the brown-coloured races not only to New Guinea, but to all the adjacent islands, which are occupied exclusively by the Papuan race. Their frizzled or woolly hair does not spread over the surface of the head, as is usual with the Negroes of Western Africa, but grows in small tufts, the hairs which form each tuft keeping separate from the rest, and twisting round each other, until, if allowed to grow, they form a spiral ringlet. Many of the tribes, especially those who occupy the interior parts of islands whose coasts are occupied by more civilised races, from whom cutting instruments can be obtained, keep the hair closely cropped. The tufts then assume the forms of little knobs about the size of a large pea, giving the head a very singular appearance, which has, not inaptly, been compared with that of an old worn-out shoe-brush. Others again, more especially the natives of the south of New Guinea and the islands of Torres Strait, troubled with such an obstinate description of hair, yet admiring the ringlets as a head-dress, cut them off, and twist them into skull-caps made of matting, thus forming very compact wigs.

But it is among the natives of the north coast of New Guinea, and some of the adjacent islands of the Pacific, that the hair receives the greatest attention. These open out the ringlets by means of a bamboo comb, shaped like an eel-spear, with numerous prongs spreading out laterally, which operation produces an enormous bushy head of hair, which has procured them the name of 'mop-headed Papuans.' Among the natives of the Fiji Islands (the easternmost limit of the Oriental Negro race), the operation of dressing the hair occupies the greater part of a day. The hair of the beard and whiskers, which generally grows very thick and bushy, is arranged in little tufts similar to those of the head, and the same peculiarity is found to exist in the hair with which the breasts and shoulders of the men are often covered, but the tufts are here farther apart than on the head and chin. This woolly or twisted hair is peculiar to the full-blooded Papuans. A comparatively slight mixture with the brown-complexioned or Malaya-Polynesian race appears to destroy the peculiarity. The hair of people of the mixed race covers the surface of the head. It is therefore very easy to distinguish the pure Papuans.

Within the geographical limits of the Indian Archipelago, the Papuans only appear as inhabitants of the sea-coast, in New Guinea and the islands immediately adjacent. In other parts of this region they have found shelter among the mountain fastnesses, maintaining an unequal struggle with the brown races by whom they are surrounded; and in some of the Spice Islands, the group nearest to New Guinea, their extirpation is matter of history. In Oeram and Gillolo a few scattered remnants of the race still exist; but they hold little or no intercourse with their more civilised neighbours, flying into the thickets which afford them shelter and concealment on the first appearance of a stranger, experience having taught them that death or captivity might be their fate if they fall into the hands of their enemies. The characteristics of the mountain Papuans must therefore be sought in those islands where their

numerical strength permits them to lead a life more fitted for human beings than that of their hunted brethren. It is an error to suppose that these Negro races disappear before civilisation. Their chief destroyers have been the wild and warlike hunting tribes of the brown race; and, excepting the case of the Moluccas, wherever European civilisation has been introduced, the Papuans are more numerous than elsewhere. The large island of Mysol or Mæsal, which lies nearly midway between the north-western extreme of New Guinea and Ceram, is said to have been occupied exclusively by Papuans when this region was first visited by Europeans, and they still form the bulk of the inland population, but the villages of the coast are occupied by a mixed race, in which the Papuan element, however, prevails. The islands of Goram, Ceram Laut, Bo, Poppo, Geby, Patani, Hoek, and the south-eastern extremity of Gillolo, are also occupied by people of the mixed race, who are remarkable for their maritime activity, and for their friendly disposition towards European strangers. The woolly-haired tribes are more numerous in the Philippines than in any other group of the Indian Archipelago, with the exception of New Guinea. M. Mallat (Les Philippines, i. p. 97, Paris 1846) gave the amount of the 'Negrito' population in 1842 as 25,000. The island on which they were first seen was named by Magellan 'Isla dos Negros,' to distinguish it from the adjacent island Zebu, where his ships remained for some months. Negros still contains a large population of Papuans; while Zebu, Samar, and Leyte are altogether free from them, and no record exists of their having ever been found there. But Mindanao and Mindoro contain several tribes of Negritos, and they form the chief population of the less accessible parts in the mountain ranges of Luzon, the largest island of the Philippine group. The accounts of the Negrito race given by the early Spanish navigators perfectly apply to their present condition. They are described as being smaller, more slightly built, and less dark in colour, than the Negroes of Africa, and as having features less marked with the Negro characteristics, but as having woolly hair.

New Guinea, etc.—The whole of the great island of New Guinea, the Ke and Aru Islands, with Mysol, Salvatti, and Wagiau, are inhabited almost exclusively by the typical Papuan, and the same Papuan race extends over the islands east of New Guinea as far as the Fiji Islands. The people on the coast of New Guinea are in some places mixed with the browner races of the Moluccas. In the typical Papuan, the colour of the body somewhat varies: generally it is a deep sooty-brown or black, somewhat approaching, but never quite equalling, the jet-black of some Negro races, but it is occasionally a dusky brown. The hair is harsh, dry, and frizzly, growing in little tufts or curls, which in youth are very short and compact, but afterwards grow out to a considerable length, forming the compact frizzled mop which is the Papuan's pride and glory. The face has a beard of the same frizzly hair; and the arms, legs, and breast are also more or less clothed with hair of a similar kind. In stature, the Papuan is superior to the Malay, and the equal or superior of the average European. The legs are long and thin, and the hands and feet larger than those of the Malay. The face

is somewhat elongated; the forehead flattish, the brows very prominent; the nose is large, rather arched and high, the base thick, the nostrils broad, with the aperture hidden, owing to the tip of the nose being elongated; the mouth is large, the lips thick and protuberant. He is impulsive and demonstrative in speech and action; his emotions and passions express themselves in shouts and laughter, in yells and frantic leapings. Women and children take their share in every discussion. The Papuan has much vital energy (?) In the Moluccas, Papuan slaves are often promoted to places of considerable trust. He decorates his canoe, his house, his domestic utensils, with elaborate carving. They are often violent and cruel towards their children. If the tide of European civilisation turn towards New Guinea, the Papuan, like the true Polynesian of the farthest isles of the Pacific, will no doubt become extinct. A warlike and energetic people, who will not submit to national dependence or to domestic servitude, must disappear before the white man. The Papuan race is found in all the islands as far east as the Fiji. Mysol and Wagiau are Papuan, mixed, partly.

The Negroes of New Guinea are in various states of civilisation. Some of the rudest dwell in miserable huts, and seek a bare subsistence by the chase or the spontaneous productions of the forest. There are, however, other Negro tribes living on the coasts who have made some advance in civilisation. These dwell by whole tribes in huge barn-like houses raised on posts, like those of the wild inhabitants of Borneo, but ruder. Their beard is crisp. The forehead is high and narrow; eyes large, dark-brown, or black; nose flat and broad; mouth large, lips thick, and teeth good; few have regular features, and most are apathetic. The ordinary men wear a waist-cloth made of the bark of a tree, called Mar, which is wrapped round the waist and passed between the legs. Women wear a short sarong to the knee, generally of blue cloth. Men and women tattoo their bodies on occasions, by pricking the skin with a fish bone and rubbing in lamp-black. The Papuans of Dori worship, or rather consult, an idol called Karwar, a figure rudely carved in wood and holding a shield. Every house is provided with the idol, which is usually about 18 inches high, is exceedingly disproportioned, the head being unusually large, the nose long and sharp at the point, and the mouth wide and well provided with teeth. The natives have also a number of 'fetishes,' generally carved figures of reptiles, which are suspended from the roofs of the houses; and the posts are also ornamented with similar figures cut into the wood. The Dori people are a seafaring people, and are expert swimmers and divers. Their prahus have outriggers, and are excavated from the trunk of a single tree. Their food consists of millet, obi, maize, a little rice, fish and hogs' flesh, and fruits. Sago is imported in small quantities. Theft is considered a grave offence; they are chaste, and marry one wife. The dresses of the chiefs among the natives of Dori consist of the saluer, or short drawers of the Malays, and the kabaya, or loose coat of calico, with a handkerchief tied round the head. The common men, and the chiefs themselves, when not in the presence of strangers, wear only a chawak, or waist-cloth of the bark of the fig, or

of the paper mulberry tree, beaten out like the bark cloth of the Polynesians. The Papuans inhabit the shore, the Arfak dwell in the mountains and interior. Both these main classes are divided into different tribes, who are generally in a state of hostility with each other. The Papuans of Dori resemble those of Mysol, which is called Long Island in the English charts, and lies about 10 miles to the east of Dori. In general they are short in stature, the most $5\frac{1}{2}$, very few $5\frac{1}{2}$ feet high, but muscular and well made. Their colour is dark-brown, inclining to black in some. Two albino children were seen there (of the same mother), with white skin rather passing to yellow, with some brown spots on the back, and with white crisped hair and blue or green eyes. The Papuans of Dori are generally affected with skin diseases; in some the skin looks as if it were covered with scales (ichthyosis). The hair is black and crisped. It has a reddish tint at the outer ends. They usually wear the hair the full length to which it will grow, which makes their head, from a distance, appear twice its actual size. In general they bestow little care upon it, so that it has a disorderly appearance, and gives them a wild aspect. There are some, however, whose hair, whether through art or naturally, is smooth and even, as if it had been clipped. The men wear a comb in their hair, consisting of a piece of bamboo having three or four long points on the under side, like a fork, running into a point above, and generally carved. This comb, which is stuck in obliquely at the side, has a small strip of coloured cotton fastened at the top, which hangs out like a streamer. The women do not wear this ornament. The beard is strongly crisped, but short; the hairs of the beard are sometimes pulled out. Most Papuans have a high but small forehead, large dark-brown or black eyes, flat broad noses, large mouths, with thick lips and good teeth; many, however, have thin crooked noses and thin lips, which give them a European physiognomy. They pierce the ears, and wear some ornaments in them, or their tobacco, which they roll in pandan leaves, and of which they are great consumers.

The appearance of the Papuans is lazy and stupid; most of them are very ugly, only a very few have regular features and a lively aspect. The women wear a short sarong, generally of blue cotton, which hangs to the knees, or a kind of breeches with very short legs. The body is otherwise entirely uncovered. Some, however, wear the sarong to above the bosom. The children of both sexes go entirely naked until the age of puberty. All wear rings on the arms, composed of fish bones, shells, copper, silver, twisted rattans or rushes. These last, of the breadth of two fingers, and usually red coloured, are put on the arm at an early age, and adhere tightly to the skin as the limb grows. The men mostly wear a similar band of rattan on the wrist of the left hand, but much broader, and which sits loose on the wrist, in order to prevent the skin being stripped off by the hard string in shooting with the bow. They tattoo themselves on different parts of the body after the death of one of their relations,—for instance, on the cheeks and under the eyes after the death of the father; on the breast for the grandfather; on the shoulders and arms for the mother; and on the back for a

brother. The women also tattoo, but chiefly after the death of one of their female relations. The figures appear to be chosen at will, mostly like those on two crossed klewang, or two curls running into each other. This tattooing is performed by young girls, by pricking the skin with a fish bone, and rubbing in soot. Large scars are seen on some, as if they had been burned. The number of such scars on one person are sometimes as many as ten, and are probably used as ornaments.

The weapons of the Papuan consist chiefly of bows and arrows, the spear, klewang, and parang, as well as the shield for protection. The bows are formed of bamboo or of a kind of very tough red wood; the string rests in two notches near the ends, and is made of rattan. The bows which they use in war are 6 or 7 feet long, those for ordinary use are mostly 3 or 4 feet. The arrows are formed of reeds, a little shorter than the bows; they have very long tapering points of bamboo, fish bones, pointed bones or wood hardened in the fire; sometimes, but not generally, these points are of iron. Most of the points have sharp barbs, which generally produce incurable wounds, especially in the case of those who have no knowledge of the healing art, and leave the cure to nature. They do not apparently use poisoned arrows. The points are put into the arrows and fastened with thread, being often subsequently blackened. They generally have a great quantity of arrows in readiness for use. The spears, like the arrows, have barbed points, and are generally 8 to 10 feet long, and frequently have, just below the point, a small bunch of cassowary feathers. The klewang and parang, which they make themselves, or purchase from ships, are of the usual form. The shield is of wood, four-sided, 5 to 6 feet high, 2 broad, somewhat bent out at the edge, and furnished with a handle at the back. They are generally carved on the outside, and ornamented with the figure of a Papuan in a sitting posture.

The trade with New Guinea and the Eastern Islands (commonly called the Bugis trade), and the trepang fishery on the north coast of Australia, is carried on chiefly in vessels called Padewalkan. These leave Macassar and the other ports of Celebes for the Eastern Islands during the westerly monsoon, returning with the south-east trade-wind. The rich produce of New Guinea, of Ceram, and the islands to the north and north-east of Timor, is collected in the Aru Islands, and vessels belonging to British and Chinese merchants annually resort to them to obtain the commodities which they require in exchange for the manufactures of Europe and continental India.

The natives of the Utanata river are the finest looking men of all the people of the west coast of New Guinea. The river is the southernmost limit of the adventurous voyages of the traders from Celebes. These men are above the middle size, and many among them may be called large men. They are stout and well made. Their colour is a dark-brown, with sometimes a bluish tinge. They have dark and small eyes, a flabby, drooping nose, the septum of which is usually bored, and an ornament of wood or hog's tusk worn therein. The mouth is large, and provided with very white teeth, which are sometimes filed

to points. The lips are tolerably thick. Their features bear considerable resemblance to those of the Africans. Some of them have marks on the body, especially on the arms, breast, and belly, made by cutting the flesh with sharp stones, and then burning the wound, which causes the flesh, when the cicatrix is formed, to stand out in relief in weals the thickness of the finger.

The Papuans of New Guinea have the sumpit or blow-pipe, but their principal weapons are the bow and arrow, and a light spear or lance.

Aiou or Yowl is a group of low circular islands situated about 70 miles W.N.W. from the Cape of Good Hope on the west coast of New Guinea, and 30 miles from Wagiau in the Gillolo passage; Aiou Baba, the largest, is in about lat. $0^{\circ} 25' N.$, and long. $131^{\circ} E.$ Other islands are Abdon and Konibar. The inhabitants are Papuans, who occupy themselves almost exclusively in fishing and in catching turtle, with which the lagoons within the reef abound.

Ansus Island is inhabited by Papuans. Their houses are built on posts, placed entirely in the water. At very low water only is the beach partially uncovered. This beach consists of mud, in which mangroves grow luxuriantly, and completely obstruct a landing. Their gardens consequently are on the surrounding islands. They wear their hair in tufts. Their appearance is good-natured, faces regular, eyes beautifully black, the mouth broad, with beautiful regular teeth, and the forehead high but narrow. Many have thin lips and finely curved noses, which give them a more European physiognomy. The men are generally handsome and well formed, stout without being too thick, strong and muscular; the women very good looking, and some children with very regular, soft faces, and long pendent curly hair.

Modera Island, about 60 miles N.N.E. of the Great Ke, is occupied by Papuans. It is the south-westernmost of a group of high islands which were at one time considered to form part of New Guinea.

Bruwer Island is on the south coast of New Guinea. The women are tattooed on the face, arms, and front of the body, but generally not on the back, in vertical stripes, less than an inch apart, and connected by zigzag markings. On the face these are more complicated, and on the forearm and wrist they are frequently so elaborate as to resemble lace-work. The men are more rarely tattooed, and then only with a few lines or stars on the right breast. Sometimes, however, the markings consist of a double series of large stars and dots stretching from the shoulder to the pit of the stomach.

The Aru, Aroe, or Arru group of islands is situated on the northern verge of the great Australian bank. They extend from lat. $5^{\circ} 32'$ to $7^{\circ} S.$, and in long. $133^{\circ} 56' E.$, running for upwards of 100 miles N. and S., and between 40 and 50 miles in breadth, and lie between the Timor Laut group and the S.W. coast of New Guinea. The more northerly of the islands are rarely more than 5 or 6 miles in circumference.

The Aru islanders are Papuans, with black or sooty-brown skins, woolly or frizzly hair, or strongly curled; thick-ridged, prominent noses, and rather slender limbs. There are some mixed races among them. The Papuan talks, laughs,

and shouts without intermission. Papuan boys sing cheerily as they walk along, or talk aloud to themselves, which is quite a Negro peculiarity. The men, in height, are from 5 feet 4 inches to 5 feet 8 inches. The women delight in combing and forking their frizzly hair, which is tied in a bunch at the back of the head, using a fork with four diverging prongs to separate and arrange the long tangled frizzly mass. The Aru Papuans told Mr. Wallace that some of their tribes kill the old folks when they can no longer work, but he saw many old people. On a man's death, all the chattels which he has collected during his life, including tusks, gongs, and precious China dishes, are broken in pieces and thrown away, and heaps of these fragments are to be seen in the villages.

The produce of the islands is pearls mother-of-pearl, trepang, tortoise-shell, paradise birds, and timber. They are given to intoxication. The men are jealous, and easily roused to anger by abuse of their women or ancestors. Their food is sago, fish, molluscs, the luxuries being tobacco and betel. They redden their hair by washing it with wood-ashes. They ornament their houses with brass trays called dulam or talam, and with elephants' tusks, all of which are destroyed on the owner's death.

Timor Island, in lat. $8^{\circ} 21'$ to $10^{\circ} 23' S.$, and long. $123^{\circ} 30'$ to $127^{\circ} 15' E.$, is occupied by tribes much nearer the true Papuan than those of the Moluccas. Slender figures of medium height; they are dusky-brown or blackish, with bushy frizzled hair, and the long Papuan nose, with the overhanging apex which is so characteristic of the Papuan, and so absolutely unknown among races of Malayan origin. The houses of the Timorese Papuan mountaineers are raised on posts. Their dead are laid on a stage 6 or 8 feet above the ground, sometimes open, sometimes covered, and retained there till money for a feast can be obtained, when they are burned. They are said to be great thieves, and the tribes constantly at war with each other, but are not very courageous or bloodthirsty. They respect the custom of tabu, which they call pomali. In their excitable disposition, loud voices, and fearless demeanours, the Timorese closely resemble the Papuans of New Guinea and the Aru Islands. The women talk to each other and to the men with loud voices, and with a self-assertion quite different from Malay women.

In the islands west of Timor, as far as Flores and Sandalwood Islands, a very similar race is found, which also extends eastwards to Timor Laut, where the true Papuan race begins to appear.

Negros or Buglas Island extends from lat. $9^{\circ} 1'$ to $9^{\circ} 50' N.$ Scattered tribes of Negritos occupy the mountain range which extends throughout the length of the island.

Flores Island, due south of Celebes, is inhabited by a race speaking six different languages or dialects, known as the Ende, Mangarai, Kio, Roka, and Galeleng. The stature is short and squablike Malays. The complexion is a good deal darker than that of the Malay; the nose flatter, the mouth wider, and the lips thicker, and the hair buckles without frizzling. The coast is occupied by the Malay or brown race, but in the interior is a people with frizzled hair, and a

similar frizzled-hair people live in the mountainous parts of Solor, Pintar, Lombatta, and Ombay.

The people of the neighbouring island of Semaó are like those of Timor, with frizzly or wavy hair, and a copper-brown colour.

The people of Bo Island are a mixed race of Papuans and the brown-skinned race.

The Papuans for the most part exist only in a savage state, deriving a scanty subsistence from the productions of nature, living in conical-shaped huts; or where they appear as occupants of the sea-coast, roaming about in small canoes in search of food. Some of the more independent tribes, by which is meant those who have exclusive possession of the country they inhabit, have, however, adopted many improvements. In several parts of the north and of the south coasts of New Guinea, the villages consist of one large house, erected on piles, and occupied by all the married people, with a smaller one adjacent for the bachelors. These houses bear a very close resemblance to those of the Dyaks of Borneo, but are smaller and of more rough construction. Here the Papuans also cultivate fruits, yams, and sweet potatoes, and keep hogs and poultry to kill for food,—in fact, are almost on a level, as far as regards agriculture, with the more uncivilised tribes of the Malaya-Polynesians, from whom, indeed, if we may judge from the names employed to designate their agricultural productions, they have derived the slight but important advance they have made in civilisation. The weapons of the Papuans are heavy wooden clubs, spears or lances of nibong or other hard wood, and darts formed of a small kind of bamboo, provided with points of hard wood or of sharpened bone. The lances are projected generally by means of a becket of sennit about a foot and a half long, one end of which is provided with a toggle. This is held between the fingers, while the other end is fastened to the lance with what sailors call a 'half-hitch' knot, which flies off when the lance is projected, thus allowing it to go free. The becket gives a greatly increased purchase to the thrower, but is much inferior in this respect to the womeroo or throwing stick of the Australians. The darts are projected by means of a powerful bow, often 6 feet in length, with a bowstring of rattan. Mr. Earl suspects that this instrument was not originally Papuan, but has been adopted from the Polynesians. Stone axes and knives of quartz are now superseded among all those tribes who have either direct or indirect communication with the traders of the Archipelago, by parangs, or chopping-knives of iron. Their agricultural instruments are mere stakes of wood, sharpened at one end, which prove sufficient to effect the rude interference with nature required by their mode of cultivation.

The art of navigation appears never to have been in a very advanced state among the Papuans, since their navigation has only extended to those countries which could be reached from the continent of Asia without entailing the necessity of going out of sight of land; nor are they yet sufficiently advanced in the science of navigation to venture on any other than coasting voyages. Towards the eastern limits of the Papuan race, where they come in close contact,

and are often mixed with the Polynesians, navigation is in a more advanced state than elsewhere, but this is evidently the result of contact with strangers, by whom, indeed, the navigation is personally conducted. The highest state of the art among the Papuans, without foreign assistance, is met with in Torres Strait, and upon the south coast of New Guinea. Here they possess large canoes of such construction, and propelled in so peculiar a manner, that we must consider them purely Papuan. Some very excellent sketches of these canoes, with a full description, are given in Flinders's Voyage. These canoes or boats are from 30 to 40 feet long, and the planks with which they are constructed are sewed together with the fibres of the cocoanut. Each is provided with an outrigger, and a platform of bamboo occupies the centre of the boat on a level with the gunwale. They are propelled in calm weather by paddles with long handles, the rowers all standing, as is generally the case among the Papuans. But the most striking peculiarity of these vessels consists in the sail, which is an oblong piece of matting set up in the foreparts of the vessel by means of two poles or masts, to which the upper corners of the sail are fastened. These masts are moveable, and the sail is trimmed by shifting the head of one of the masts aft. According to Mr. Earl's experience, these boats sail very indifferently, except before the wind; but Captain Flinders, who had good opportunities of judging, maintains a more favourable opinion. They are often to be met with about the month of March 300 or 400 miles down the north-east coast of Australia, the islanders being in the habit of making an annual voyage in this direction. The stopping-places are usually the islands lying off the coast, where they obtained tortoise-shell and trepang, the chief objects of their voyages. The natives of the south coast of New Guinea have very large canoes of a similar but more unwieldy construction, and propelled by a similar description of sail. These have never been seen far from the coast, and in fact are almost unmanageable from the difficulty experienced in steering such unwieldy masses with paddles alone. It is therefore difficult to conceive for what purpose they have been constructed, unless it should be for war, in which case their large size would give them an imposing appearance. The New Guinea canoes generally are of light construction, and are provided with an outrigger. The larger ones have an attap roof, and are capable of containing an entire family, with household furniture and domestic animals.

With regard to the general disposition of the Papuans, a great difference is found between those living in a state of independence and those who exist in bondage among the neighbouring nations. The former are invariably found to be treacherous and revengeful, and even those who have long been accustomed to intercourse with strangers—the tribes of the north-west coast of New Guinea, for example—are never to be depended upon, and the greatest precautions are always taken by those who visit them for purposes of trade. The wilder tribes generally avoid intercourse with strangers, if the force which lands is sufficiently great to cause alarm, but if otherwise, they pretend friendship until opportunity occurs, when they make a sudden and ferocious attack.

But what distinguishes them most from their neighbours, the Malaya-Polynesians, and even from the Australians, is the aversion, even hatred, they bear towards those who attempt to settle in their territory, and which is continued as long as a man of the tribe exists. It is probably this perfectly untameable nature that has led to their utter extermination in all those islands of the Indian Archipelago that did not possess mountain fastnesses, to which they could retire to lead a life similar to that of the Bushmen of South Africa. There have been instances of this in Van Dieman's Land, Melville Island (N.W. coast of Australia), and at Fort Du Bus on the west coast of New Guinea, in all which settlements the country was occupied by a pure or nearly pure Papuan race. In the former, hostility was continued as long as a native remained on the island, and in the two last, until the settlements were abandoned in despair. On the other hand, their neighbours the Australians have invariably submitted after a single trial of strength; and the Malaya-Polynesians, when not under the influence of other foreigners, have always evinced a desire to have strangers, especially Europeans, settled among them, as shown by the people of the Moluccas when first visited by the Portuguese, and as displayed at the present time in those remote parts of the Indian Archipelago where the race maintains its ancient purity. The untameable ferocity of the Papuans only exists as long as they remain in their native country. On leaving it their character seems totally changed, as far as regards this particular. The Papuan slaves, who exist in great numbers in the eastern parts of the Archipelago, are remarkable for their cheerful disposition and industrious habits. The aversion to strangers felt by these Negroid races was retained by the Negrito of the Andamans for several years, but in 1873, while the Editor was there, a tribe voluntarily came in their canoes to Ross Island. The Andaman Minicopi have since partly settled.

With regard to stature, a great difference is found to exist between various tribes, even in New Guinea, and which has led to much confusion in the descriptions given by travellers, who have, perhaps, each only seen a single tribe. On the south-west coast of New Guinea, within a space of 100 miles, are to be found tribes whose stature is almost gigantic, and others whose proportions are so diminutive as almost to entitle them to the appellation of pigmies; while the manners and customs of each so exactly correspond, as to preclude the supposition that these peculiarities can be other than accidental. It is difficult to account for these peculiarities, but as the stout and stalwart Papuans are met with only among those coast tribes who have maintained their independence, and at the same time have acquired many of the agricultural and mechanical arts from their neighbours the Malaya-Polynesians, while the pigmies are found only in spots where they have been driven to mountain fastnesses, or have fallen under the influence of other races, we may conclude that their mode of life has much to do with this difference in point of stature and proportions.

The Papuans of Dori hang the skulls of the Arfak under the eaves of their houses, which are built in the water on posts, and led up to by rude wooden bridges. There is a large council chamber at Dori, supported on larger posts, on

each of which is a rude carving of a naked man or woman, with other revolting carvings near. The people of Dori resemble those of the Ke and Aru Islands; many of them are very handsome, tall, well made, with well-cut features and aquiline noses. Their colour is a deep brown, often approaching to black, and their frizzly hair is combed up into a mop-like form by means of a long six-pronged fork. The language spoken at Dori is not understood by the Papuans at Humboldt Bay. The Dori people are great carvers and painters. Their food is roots and vegetables, with fish and game as a luxury. The Arfak or hillmen of New Guinea are generally black, but some are brown like the Malay. Their hair, though more or less frizzly, is sometimes short and matted, instead of being long, loose, and woolly. The many Papuan tribes in New Guinea are generally in a state of warfare with each other, and return from their warlike expeditions with heads. The natives have also a number of 'fetishes,' generally carved figures of reptiles, which are suspended from the roofs of the houses, and the posts are also ornamented with similar figures cut into the wood.

A widow remains in the family of her deceased husband.

The Papuans, when placed in circumstances favourable for the development of their powers, are physically superior to the races of South-Eastern Asia. Some of the New Guinea tribes would bear a comparison, in point of stature and proportions, with the races of Europe, were it not for a deficiency about the lower extremities. Even the more diminutive mountain tribes are remarkable for energy and agility, — qualities which have led to their being in great demand as slaves among their more civilised neighbours. With regard to mental capacity, also, they are certainly not inferior to the brown races; but their impatience of control while in an independent state, utterly precludes that organization which would enable them to stand their ground against encroachment, and they invariably fall under the influence of the Malaysians whenever the two races are brought into contact.

Intellectually, Mr. Wallace places them above the Malays, though the Malays have acquired more actual civilisation by contact with superior races. The Papuans have a taste for personal embellishment, but it takes such eccentric forms as the attaching of two boar's tusks joined together to the nose, with the tips turned upwards. They eat many kinds of large insects. They are totally ignorant of metals, and the coast dwellers are even unable to procure fire for themselves. When they accidentally let their fires go out, they have to ask a spark of the hill tribesmen, who produce it by friction. Yet they divide the year into lunar months, have names for the constellations, and one of the tribes, the Ilemu, counts up to a million.

Certain of the Papuan customs distinguish them from the Malaya-Polynesians, and certainly are of Papuan, or at least of Negro origin. One of these is the custom of raising the skin in cicatrices over various parts of the body, especially on the shoulders, breast, buttocks, and thighs. This must not be confounded with the tattooing or puncturing the skin which is practised by many of the Malaya-Polynesian tribes, and which is never met with among the Papuans, as

the scarifications about to be described are unknown to the others. The skin is cut through with some sharp instrument in longitudinal stripes, and, if on the shoulder or breast, white clay or some other substance is rubbed into the wound, which causes the flesh below to rise; and these scarifications, when allowed to heal, assume the form of raised cicatrices, often as large as the finger. It appears that those on the arms and breast, which are the largest and most prominent, are made in order to qualify them for admission to the privileges of manhood, by showing their capability of bearing pain. Boring the septum of the nose is universally practised among the Papuans. In the first instance they wear a roll of plantain leaf in the orifice, which by its elasticity enlarges it to a sufficient size to admit the thigh-bone of a large bird, or some other ornament, which is then worn extending across the face on all great occasions. British sailors have a very quaint name for this practice, which often comes under their observation among the Papuan islands of the Pacific; they call it 'sprit-sail yarding,' after a cruel method they have of treating sharks and dog-fish, which are frequently let go after having been hooked, a piece of wood being previously thrust through their nostrils, which, projecting on either side, prevents them from getting their heads under water, and they die a lingering and painful death.

Filing or grinding down the front teeth until they become pointed, is practised by some of the tribes of New Guinea and of the adjacent islands of the Pacific. This custom, however, is not confined exclusively to the Papuans, as it is practised also at the Pagi Islands, on the west coast of Sumatra, the natives of which appear to be Malaya-Polynesians. This custom must not be confounded with one which is common among many of the Malayan and Bugis tribes, that of grinding down the front teeth until they become almost level with the gum. Another singular custom, which is only met with among the Papuans, or the tribes closely bordering on them, is that of dyeing the hair (which is naturally black) a reddish or flaxen colour, by using applications of burnt coral and sea-water in some instances, and preparations of wood-ashes in others. This process seems to expel all the dark colour from the hair, leaving it of a flaxen tinge, which appears to bear a close resemblance to the celebrated 'capillus flavus' so much admired among the Roman ladies, and which seems to have been produced by a similar process. The only Malaya-Polynesians whom Mr. Earl had known to practise this custom are some of the natives of Timor Laut, Sermatten, and Baba Islands lying to the westward of New Guinea, and not very remote. He was therefore induced to consider it as a Papuan, or rather, perhaps, as a Negro custom, for it is equally prevalent in many parts of Africa, especially among the Somali and other tribes in their neighbourhood. All travellers who have had opportunities of visiting Aden will have observed this custom among the African Somali employed in coaling the steamers, who sometimes appear with the plaster of coral still attached to their heads.—*Earl's Papuans; Logan in J. Ind. Arch.*, 1850; *A. R. Wallace, East. Arch. ii.* pp. 62, 180, 200; *Do. in Journ. R. Geog. Soc.* xxx. p. 172; *Crawford's Dictionary*; *Crawford's Hist. Arch. i.* p. 18; *Bikmore*, pp. 204, 242;

M'Gillivray's Voyage in the Rattlesnake, i. p. 262; *Lubbock, Origin of Civilisation*, pp. 44, 122, 385; *Horsburgh, Journ. Ind. Arch.*; *Newbold in Royal As. Soc. Journ.*, 1845; *Quarterly Review*; *Maraden, Sumatra*; *Asiatic Researches*; *Cook's Voyages*; *Syme's Embassy to Ava*; *Wilkes' Exploring Expedition*; *Mallat, Les Philippines*; *Wallace*; *Kulf.*

PAPYRUS ANTIQUORUM. Willd.

Cyperus Syriacus, Parl. | Babee . . . of SYRIA.

This papyrus grows in Egypt, Syria, and Sicily. It is translated in the Bible rush and bulrush; is the sedge from the pith of which the ancients made paper.—*Royle*; *Birdwood*; *Layard, Nineveh*.

PAPYRUS DEHISCENS. Nees.

Cyperus corymbosus, H.B. | C. Pangorei, Roxb. i. p. 202.

Chumati pati, . . . HIND.

A sedge of the Peninsula of India and of Bengal, very common on the banks of the Hoogly, where it helps to bind and protect the banks.—*Voigt*.

PAPYRUS PANGOREI.

Cyperus tetegum, Roxb. | C. Pangorei, Rottl.

Madoorkati, . . . HIND.

A sedge of the Peninsula of India, extremely common about Calcutta, and very extensively employed in Bengal for making the elegant, shining, useful mats for which the capital of India is famous, and which are frequently imported into Europe. When green, the culms are split into three or four pieces, which in drying contract so much as to bring the margins in contact or to overlap each other.—*Eng. Cyc.*; *Voigt*; *Royle*.

PAPYRUS TEGETIFORMIS. Arnot, W.

Cyperus nudus, Roxb. | Kuch-kuchiya, . . BENG.

A sedge of Bengal.—*Voigt*.

PAR. HIND., PERS. A feather. Par-i-taos, a shawl-wool cloth or pashmina of two colours, literally peacock's feather. Par-i-pur, a shawl-wool fabric with a nap.

PAR, a river which rises in the W. Ghats, in lat. 20° 30' N., and long. 73° 43' E., and runs W. into the Arabian Sea. Length, 50 miles. It has no tributaries of note; area drained small, and imperfectly defined. Though rugged, the Konkans have many fertile valleys, each of which for the most part affords a passage for a small river or torrent, holding a westerly course, like the Par, from the ghats to the Indian Ocean. The most fertile spots are on the banks of streams. The rivers abound with fish, but are also frequented by crocodiles. The Savitri also is navigable as far as Mhar, 30 miles from its mouth.

PARA. MALEAL. A grain measure of Malabar, equal to 10 Yedan galli, and containing 1264 cubic inches, rather more than 4 imperial gallons, or 40 lbs. avoirdupois.

PARA. BALUCHI. A section of a tribe.

PARA. BENG. Also Paragam. A hamlet, a village.

PARA. SANSK. Strange, foreign, supreme, infinite; hence—

Parabara, SANSK., the most high; but Parabaravasta, as conceived by the Hindus, is not the true Supreme Being. As an immaterial being, it is the universal spirit; as a material being, it is the universe; the masculine power is identified with Siva, and the feminine power is the so-called Sakti.

Parabrahma or Brahm of the Hindus, the supreme Universal Spirit, the Supreme Being, is a term that first appears in Hindu religious books,

in some of the best Upanishads, or appendages to the Vedas, of later date than the first three, and introducing a different and superior theology. It seems to have been a first effort towards the recognition of a Creator; and many Hindus now recognise the Almighty as an infinite, eternal, incomprehensible, and self-existent Being. He who sees everything, though never seen; he who is not to be compassed by description, and who is beyond the limits of human conception; he from whom the universal world proceeds; who is the lord of the universe, and whose work is the universe; he who is the light of all lights, whose name is too sacred to be pronounced, and whose power is too infinite to be imagined, is Brahm! the one unknown, true being, the creator, the preserver, and destroyer of the universe, from whom all souls come, and to him again return. Under such, and innumerable other definitions, is the Deity acknowledged in the Vedas, or sacred writings of the Hindus. But while there are learned Brahmans who 'thus acknowledge and adore one God, without form or quality, eternal, unchangeable, and occupying all space, they have carefully confined their doctrines to their own schools, and have tacitly assented to, or even taught in public, a religion in which, in supposed compliance with the infirmities and passions of human nature, the Deity has been brought more to a level with man's own prejudices and wants, and the incomprehensible attributes assigned to him, invested with sensible and even human forms.' Upon this foundation the most discordant fictions have been erected, from which priestcraft and superstition have woven a mythology of the most extensive character. In India, the human form in its natural state, or possessing the heads or limbs of various animals, the elements, the planets, rivers, fountains, stones, trees, etc. etc., have all been deified, and become objects of religious adoration. The sun, moon, and all the heavenly host; fire, earth, and all natural phenomena,—all nature, indeed,—the passions and emotions of human beings, their vices and virtues, are transformed into persons, and act appropriate parts in the turbulent history of man. The omnipotent God, whom the Hindu has been taught to consider as too mighty for him to attempt to approach, or even to name, has been lost sight of in the multiplicity of false deities, whose images have been worshipped in his place. To these deities the many splendid temples of the Hindus have been erected, while throughout the whole of India not one has been devoted to Brahm, whom they designate as the sole Divine Author of the universe, the One Eternal Mind, the self-existing, incomprehensible Spirit. But the will of God, that the world should exist and continue, is also personified by them, and his creative and preservative powers are made to appear as Brahma and Vishnu, while Siva is the emblem of the destructive energy,—not, however, of absolute annihilation, but rather of reproduction in another form. In the Hindu religion, therefore, this triad of persons represents the almighty powers of creation, preservation, and destruction. In their metaphysics, Brahma is matter, Vishnu spirit, Siva time; or, in natural philosophy, earth, water, and fire. These three persons have wives, the executors of the divine will and the energies of their respective lords. The preservative and representative powers, being in constant action, are,

as have been also their wives and children, fabled to have descended on earth innumerable times in divers places for the instruction and benefit, including the profitable punishment, of mankind. And these endless incarnations have been worked up by the poets with a wonderful fertility of genius and the pomp of language into a variety of sublime descriptions, interspersed with theological and moral texts, that at length they were received as inspired productions, and became the Hindu standard of truth. Brahma, the creative power, is not specially adored in temples dedicated exclusively to him. His creative duties over, his portion of the Divine activity ceased to operate on the hopes and fears of mankind. In their mythology, however, the Hindus narrate fabulous persecutions and warfare which overthrew Brahma, his temples and worship; and the sects of Vaishnava and Saiva now comprise all the individuals of the races in India distinguished by the appellation of Hindus. A philosophic few excepted, they are worshippers of a superstitious and idolatrous polytheism; and the Hindu erects no altars to Brahm, the infinite, incomprehensible, self-existing Spirit, 'which illumines all, delights all, whence all proceed; that by which they live when born, and that to which all must return.' The Narayana of the Hindu of the present day is rather the Spirit of God moving on the water, and can be regarded but as the spirit of Brahm (Ins. of Menu, ch. 1, v. 10), though the two Hindu sects claim for their Vishnu and Siva the title of Narayana, and Brahm himself is sometimes called Narayana. At present there will not be found two Hindu families whose belief is identical, though almost all the educated of the people recognise one God under one name or another. God thus adored is Brahm, the One Eternal Mind, the self-existing, incomprehensible Spirit. From time to time great reformers rise, condemning the prevailing Hindu idolatry, and so anxious are the people to know the truth, that every new teacher immediately gathers around him a number of disciples.—*Tod.*

PARABEIK. BURM. A notebook made of thick, coarse, bark paper, coated with a charcoal paste and folded. They are written on with a stentite pencil.—*Forbes.*

PARACELSUS, an eminent medical practitioner. He died A.D. 1541, at the age of 48, in the hospital of St. Sebastian, at Salzburg, in Germany, after a life of great indulgence and dissipation.

PARACHAILI. HIND. A caste of traders in the Panjab; their merchandise is carried by the Kabuli, Tajak, and some of the Khaibar tribes.

PARACLETE. Muhammadan doctors unanimously teach that by the Paraclete, or, as they choose to read it (John xvi. 7), 'the Periclyte or Illustrious,' their prophet was intended and no other.—*Sale's Koran*, c. clxi.

PARADESI or **Pardesi.** HIND. Wandering devotees from Northern India; also any foreigner from Hindustan.

PARADISE is supposed to be derived from the Arabic Firdus, one of the regions of the paradise of the Muhammadans. More truly **Pari-des**, the other land, the future world of the Persians, has also been surmised. See **Jannat**.

PARADISE BIRDS, Papua birds.

Burong mati, . . .	ARC.	Ave de Pardios, . . .	PORT.
Manuk devata, . . .	JAV.	Burong Papua, . . .	TERN.
Burong devata, . . .	MALAY.	Soffu, Sioffu, . . .	„

PARADISE BIRDS.

Of the various birds of paradise, named by the Indians birds of Ternate (Valmont de Bomare, *Historie Naturelle*, iv. p. 296); by the Ternatians, birds of God (Valentyn's Indian Archipelago, iii. pp. 306-313); by the Dutch, king's birds (Forrest's *Voyage to New Guinea*, p. 142); and by the Spaniards, birds of the sun (Aldrovandus, Valmont de Bomare, iv. p. 297), the names *Manuk devata* and *Burong devata*, or bird of God, have been adopted in modifications by several naturalists (Margrav, Brazil, p. 207; Rai, *Syn. Av.* pp. 21-27; Briss, p. 2-130; Buffon's *Hist. Nat. des Ois.* iii. p. 207). Of these, the great *Promeropes* (Pritchard's *Researches*, i. p. 83), the most beautiful of winged creatures, were fabled by the fancy of the Arabian poet, as visitants from heaven to earth; and it is a myth among the islanders of the Archipelago, that when old, and feeling the approach of death, the paradise birds fly upward towards the sun, but, having spent their strength in the inferior world, fail to reach again their celestial home, fall and die as they descend,—a graceful fancy not forgotten by the moralist or the poet (Camœns' *Lusiad*, Book x.). No representation can exaggerate their beauty, or excel the lustre of their plumage. They were supposed footless, and incapable of alighting, until it was discovered that the Indians cut off their feet before preserving them. They fly always against the wind. They are caught in New Guinea, the Aru Islands, Mysol, Salwatti, Wagiu (Crawford's *Journ. Ind. Arch.* v. p. 182), with a species of bird-lime, but are also shot with blunt arrows. In the nutmeg season, also, they come from their breeding grounds in the interior of that vast island, and sail in flocks of thirty or forty over the eastern borders of the Archipelago. They form valuable articles of export. Europe is supplied chiefly from Batavia, China from the Molucca and Aru Isles, while the natives of that remote group, with many of the Malays, adorn their casques at martial pageants with feathers plucked from their glittering wings.

Mr. A. Russel Wallace applies the term birds of paradise to the following:—

- Paradisea apoda*, the Great Paradise Bird, in the Aru Islands.
- P. Papuana*, the Lesser Paradise Bird, in New Guinea, Mysol, and Jobie.
- P. rubra*, the Red Paradise Bird, in Wagiu.
- Cicinnurus regius*, the King Paradise Bird, in New Guinea, Aru Islands, Mysol, Salwatti.
- Diphyllodes speciosa*, the Magnificent, in New Guinea, Mysol, and Salwatti.
- D. Wilsoni*, the Red Magnificent, in Wagiu.
- Lophorina atra*, the Superb, in New Guinea.
- Parotia seppennisi*, the Golden Paradise Bird, in New Guinea.
- Semioptera Wallacii*, the Standard Wing, in Batchian and Gillolo.
- Epimachus magnus* (*Upupa magna*, *Gm.*, *U. superba*, *Lath.*), the Long-tailed Paradise Bird. Body generally black or brownish-black; tail graduated, thrice as long as the body (Lesson says three feet in length, French); feathers of the sides elongated, raised, curled, glittering on their edges with steel-blue, azure, and emerald green, like precious stones; the head and the belly lustrous, also with steel-blue, etc. In truth, language fails to convey any just idea of the magnificence of this species. It inhabits the coasts of New Guinea.
- Selenicides alba*, the Twelve-wired Paradise Bird, in New Guinea and Salwatti.
- Ptiloris magnifica*, the Scale-breasted Paradise Bird, New Guinea.

PARADISE BIRDS.

Pt. Alberti, Prince Albert's Paradise Bird, in North Australia.

Pt. Paradisea, the Rifle Bird, in East Australia.

Pt. Victoris, the Victoria Rifle Bird, in N.E. Australia.

Astrapia nigra, the Paradise Pie, in New Guinea.

Sericulus aureus, the Paradise Oriole, in New Guinea and Salwatti.

Mr. D. G. Elliot, in 1873, in a monograph of these beautiful birds, in addition to those enumerated by Mr. Wallace, gave the following:—

Elurædus buccoides, *crassirostris*, *melanotis*.

Amblyornis inornata.

Ohlamydodera cerviniventris, *maculata*, *mucialis*, *xanthogastra*.

Diphyllodes república, *speciosa*.

Drepanornis Alberti.

Epimachus Elliotti, *speciosus*.

Mimicodia atra, *chalybea*, *kerendreni*.

Paradigalla carunculata.

Paradisea minor, *raggiana*, *sanguinea*.

Ptilonorhynchus Rawnsleyi, *violaceus*.

Sericulus melinus.

Xanthomelus aureus.

Paradisea apoda is perhaps the most elegant of all these birds. It is le grand émeraude of the French. The birds of paradise, says M. Lesson, or at least the emerald, live in troops in the vast forests of the country of the Papuans, a group of islands situated under the equator, and which is composed of the islands of Aru, Wagiu, and the great island called New Guinea. They are birds of passage, changing their quarters according to the monsoons. The females congregate in troops, assemble upon the tops of the highest trees in the forests, and all cry together to call the males. These last are always alone in the midst of some fifteen females, which compose their seraglio, after the manner of the gallinaceous birds. They are as omnivorous as the crow, and, like the turkeys, Argus pheasants, the dancing bird of America, *Rupicola coyana*, and Sat-bhai or seven brothers of India, are fond of displaying their plumage.

Paradisea regia, called the Burong raja, also Goby-goby, is a very beautiful bird, first described by Linneus as the great paradise bird, whose call is wawk, wawk, wawk, wok, wok, wok.

In the genus *Paradisea* of Linneus, many birds were included since transferred to other genera; but three species are still retained in it, viz. *P. apoda*, *L.* (*P. major*, *Shaw*), back of a deep maroon-brown, contrasting with the golden-fulvous neck; *P. Papuana*, *Bechstein* (*P. minor*, *Forster*), back of a pale golden-brown, shading into the golden-fulvous of the neck; *P. rubra*, *Cuvier* (*P. sanguinea*, *Shaw*), back of the same bright golden-fulvous as the crown and neck, the long axillary plumes gorgeous red, and broad flattened middle tail-feathers, like long shreds of whalebone. In other respects the general characters are the same. All have short velvety feathers of a golden-fulvous hue on the crown and nape, with the throat and forehead deep, dark, satiny green, most developed in *P. rubra*, least so in *P. Papuana*. *P. apoda* and *P. rubra* have a black chin, and *P. apoda* has a broader green frontal mark than *P. Papuana*; while *P. rubra* has the fore part of the head green to beyond the eyes, the feathers being developed to form two hillock-like tufts on the head, and lengthened also on the sides of the throat, where disposed in concentric series, instead of uniformly as in the others. Moreover, the golden-fulvous of the nape is continued round the front of the

neck in *P. rubra* only; and *P. apoda* alone has a peculiar extraordinary denseness of feathering on the breast.

In the beautiful little king-bird of paradise (*Cinцинurus regius*), the stem-like middle tail-feathers are broadly barbed at the extremity, where they curl round in a singular manner to form a flat disc, of a deep emerald-green hue; and the axillary tufts are comparatively short, and consist of ordinarily-shaped feathers, which are brown with broad emerald-green tips.

In the *Samalia magnifica* there are huge neck-tufts, in addition to small axillary tufts, and the middle pair of tail-feathers again assume the form of lengthened stems.

In the *Parotia sex-setacea*, the feathers of the flanks are extraordinarily developed, composing a huge floccose mass; and each side of the head is ornamented with three long stems terminated by a black oval.

In the *Lophorina superba*, the scapulary feathers are enormously developed, and form a sort of erectile mantle; this splendid creature being also peculiarly adorned upon the breast.

The paradise birds of Aru at their pairing season have sacaleli or dancing parties, in certain trees of the forest, with immense heads, spreading branches, and large but scattered leaves, giving a clear space for the birds to play and exhibit their plumes. The bird is nearly as large as a crow, and is of a rich brown coffee colour. The head and neck is of a pure straw yellow above and rich metallic green beneath, and long plummy tufts of golden-orange feathers spring from the sides beneath each wing, and when the bird is in repose are partly concealed by them. At the time of its excitement, however, the wings are bent over its back, the head is bent down and stretched out, and the long plumes are raised up and expanded till they form two magnificent gold fans, striped with deep red at the base. When seen in this attitude it really deserves its name; a dozen or twenty full-plumaged male birds assemble together, raise up their wings, stretch up their necks, and elevate their exquisite plumes, keeping them in a continual vibration. Between whiles, they fly across from branch to branch in great excitement, so that the whole tree is filled with waving plumes in every variety of attitude and motion.—*Hardwicke and Gray, Ill. Ind. Zoology*; *F. D. Bennett, Wanderings*; *Wallace, Malay Archip.* ii. 141-220; *Lesson*.

PARADISE FISH, *Polynemus risua*, the Tapsi or mango-fish of India, is the *Polynemus paradiseus* of Linnaeus (a name applied to another species by Bloch), on account of its long lateral filaments. Esteemed excellent food in India, and the sound furnishes isinglass.—*Simmonds' Dict.*

PARADISE FLY-CATCHER, *Tchitra paradisi*, *Linn.*, shah bulbul or rocket-bird, though not common, its singularly attractive plumage can scarcely escape observation. The adult male has a blue head, white body, with two of the tail-feathers prolonged for upwards of 8 inches beyond the tip; these, in the female, scarcely extend beyond a quarter of an inch. The young birds are chesnut. Several birds are named of paradise.

The Bhim-raj or Indian mocking-bird, a species of Drongo or king crow (*Edolius paradiseus*); the male of the former having its two middle tail-feathers much elongated, and the other having its outer-

most tail-feathers prolonged into wire-like stems, barbed and twirled at the extremity. In like manner, the *Vidua paradisaea* is a finch-like bird of Africa; the famous Quesselt of the ancient Mexicans is the Trogon or *Calurus paradisaeus*; and the Stanley crane, which has elongated tertiaries sweeping down to the ground, is the *Grus paradisaea* of Temminck.

PARADOXURUS, a genus of mammals of the sub-family Viverrinae.

Paradoxurus bondar, *Gray*, Terai tree-cat.

P. hirsutus, *Hodgson*. | *P. pennantii*, *Gray*.

Baum, Bondar, . . . BENG. | Machhaba, . . . NEPAL.

Chinghar, . . . HIND. | Malwa, . . . "

The Terai, Bengal, and Bohar.

Paradoxurus derbyanus, *Gray*, Malayana.

Paradoxurus Grayi, *Bennett*, hill tree-cat, is the *P. nepalensis*, *Hodgson*, and *P. bondar*, *Temm.*

Paradoxurus fasciatus, a civet cat of Nepal, S.E. Himalaya, Arakan, N. Burma, over much of the Archipelago.

Paradoxurus leucomystax, *Gray*, Malayana.

Paradoxurus musanga, palm-cat.

P. typus, *F. Cuv.* | *P. prehensilis*, *Gray*.

P. fallaxii, *Gray*. | *Viverra hermaphrodita*,

P. croasii, *Gray*. | *Pallas*.

P. dubius, *Gray*. | *P. strictus*, *Hodgs.*

P. musangoides, *Gray*. | *P. quadriscipitatus*, *Hodgs.*

Bondar, . . . BENG. | Jhar-ka-kuta, . . . HIND.

Kara-bek, . . . OAN. | Ud, . . . MAHR.

Menuri, Lakat, . . . HIND. | Maram-pilli, . . . MALBAL.

Khatas, . . . " | Manu-pilli, . . . TEL.

Common and abundant throughout the greater part of British India; lurks by day among the fronds of the cocoanut palms, rolled up as a ball. It will live for months in confinement on vegetable food, but preferring flesh. It is said to consume the toddy of the palmyra.

Paradoxurus trivirgatus, *Temm.*, Ceylon, Malay Peninsula and Islands.

Paradoxurus tytleri, *Blyth*, Andamans.

Paradoxurus zeylanicus, *Pallas*. This species peculiar to Ceylon. It has a dark variety formerly termed by Dr. Kelaart *P. montanus*, but now described as *P. zeylanicus*, var. *Fuscus*, beetle brown throughout; no streaks on the back perceptible; fur very glossy; tail with a bright golden-yellow subterminal ring. It comes from Newera Elia.—*Temm's Ceylon*; *Serdon's Mam.*

PARADZKA of Burmese Buddhism, four unpardonable sins,—fornication, theft, murder, and a false profession of the attainment of monachism.

PARAGUAY TEA, *Ilex Paraguayensis*. The leaves, collected in Paraguay and South Brazil, are dried and used as a tea. See Mate.

PARAH, an Indian measure of capacity, two feet square and six and a half inches deep. The internal measure of a standard parah is a cube of 11.57-100 inches. The weight for various goods according to the Ceylon custom-house practice is,—for coffee, 35 to 50 lbs.; pepper, 27 to 30 lbs.; salt, 52 to 55 lbs.; paddy, 30 to 33 lbs.; husked rice, 42 to 46 lbs. In Bombay, eight parah make a candy, by which seeds, grain, etc., are measured. The parah contains 7 paillics, and weighs 19 lbs. 9 oz. 9.6 drs. The parah measure for salt is 1607.61 cubic inches.—*Sim. Dict.* See Para.

PARAKSHITA, a ruler of India. The time of his birth is uncertain. The kings of Magadha were of six dynasties, viz. that of Barhadrasa, of the line of Pandu, the first of which was Jara-

sandha, a contemporary of Yudishthra and Krishna; according to Sir William Jones, B.C. 3101, according to Professor Wilson in the reign of Saba-deva, B.C. 1400, Parakshita was born and the great war ended, and in the reign of Ripunjaya, B.C. 915, a Buddha was born.

PARA KUDI, meaning foreign holder, a cultivator whose tenancies resemble closely the coloni and aratores of the Roman empire.

PARALI, from Pral, HIND., of Panjab. Straw of *Oryza sativa* or rice-straw, and *Triticum aestivum*, or wheat-straw. These are extensively employed by the hill tribes for snow-shoes. Price, 2 annas per pair.—*Powell*, i. p. 521.

PARALIA, of the Greeks, or the country of the Aii, is the present South Travancore.

PARAMAHANSA is a word used in the ninth volume of the As. Res. p. 318 (Cal. 4to edit.), where it is applied to Hindu ascetics of the orthodox sect in the last stage of exaltation; they disuse clothing. Now-a-days, individuals entirely naked are perhaps never seen in places of European intercourse; but up to the early part of the 19th century, dozens sometimes of these brawny saints were to be seen lolling and sleeping in the streets, and on shop-boards, as naked as they were born. They were always treated with great respect, especially by women; and at all times Hindu women in passing them saluted the ascetic. Four kinds of the Hindu ascetic mendicants, the Kutichara, Bahudaka, Hansa, and Paramahansa, differ from each other only in the graduated intensity of their self-mortification and profound abstraction, but the Paramahansa is the most exalted. He is occupied exclusively with the investigation of Brahm, or the Supreme Spirit; he is equally indifferent to pleasure or pain, insensible to heat or cold, and incapable of satiety or want. Individuals used to be met with naked in all weathers, never speaking, and never indicating any natural wants, and what was brought to them as alms or food was received by the attendants, whom their supposed sanctity or a community of interests attached to them, and by these attendants they were fed and served on all occasions as if they were as helpless as infants.—*Moor's Pantheon*; *Wilson*. See Hindu.

PARA MANIK. HIND. As the enforcement of Hindu caste observances cannot be trusted to the members of each caste as individuals, the result has been the growth of this class of inquisitors, who are perpetually prying into the minutest privacies of life to see that nothing is amiss.

PARAMATMA. SANSK. The Supreme Soul of the universe, or rather the Universal Spirit. The Hindus do not dispute the names of God or Allah, because they consider these expressions synonymous with Parameshwara, the Supreme Being,—that is to say, the Paramatma or Supreme Spirit of the Vedantist, the Siva of the Saivite, the Vishnu of the Vaishnavite. This exalted being, they consider, does not interfere immediately in the affairs of men; no question of scripture is necessarily brought forward by the introduction of his name. But when the names of Jesus Christ and Mahomed are employed, Hindus understand these to refer to some man who appeared on this earth, and the belief in whom is necessarily inconsistent with the belief in their own scriptures. Parameshwara, SANSK., from Param, excellent, and Eshwara, God, or, more

simply, the glorious.—*Rasamala*, *Hindu Annals*, ii. p. 441.

PARAMITA, a queen of the Amazons, who is mentioned in the Mahabharata as conqueror of Arjuna, when he was accompanying the horse for the Aswa Medha, or sacrificial horse.

PARAMPA or Paramba. MALEAL. A garden, a coconut or areca-nut plantation.

PARANCH or Pranch. HIND. A written placarded notice demanding redress, or threatening destruction of the property.

PARANDA. HIND. A silk material, used as a hair ornament in Lahore; also a bird.

PARANG and Szanskar are districts in the N.W. Himalaya; Piti and Guge are Tibetan districts; all east of Piti is Tibetan.

PARANG. MALAY. A sword, a chopping-knife.

PARANSOTI TAMPIRAN was the head of a Saiva Matam (monastery) at Madura, during the reign of Ativira Pandiyan, about the 12th century. At the request of the king, he wrote a Tamil poem, *Tiruviliyadal Puranam*, translated from the Sanskrit Kalasya Mahatmaya, relating the 64 sports of Siva.

PARAPPAR. TAM. An overseer, a term of courtesy for Brahmans amongst the Tamil people. See Ayar.

PARASANG, a Persian long measure of 3 or 4 miles, more or less in different districts.

PARASARA or Parashara, the earliest Hindu writer on astronomy whose name has come down to us, and is supposed to have lived about the 14th century, B.C. 1391, but has been variously estimated down to B.C. 575. He resided at Sri Shaila, and is said to have been a son of Vasishtha, also a son of Saktri, and grandson of Vasishtha. By an amour with Satyavati, a fisher girl, he was father of Krishna Dwaipayana, styled the Vyasa or arranger of the Vedas. Parasara was a disciple of Kapila, and he is said to have written also on Dharma Sastra; to have received the Vishnu Purana from Pulasteya, and to have taught it to Maitreya.

PARASGAR, HIND., of Kashmir, a shawl-washerman.

PARASHAWARA, now called Peshawur, is first mentioned by Fa Hian in A.D. 400, under the name of Fo-leu-sha. It is next noticed by Sung-Yun in A.D. 502, at which time the king of Gandhara was at war with the king of Kipin or Kophene, that is Kabul and Ghazni, and the surrounding districts. Sung-Yun does not name the city, but he calls it the capital, and his description of its great stupa of king Kia-ni-ssekia, or Kanishka, is quite sufficient to establish its identity. At the period of Hiwen Thsang's visit in A.D. 630, the royal family had become extinct, and the kingdom of Gandhara was a dependency of Kapisa or Kabul. But the capital, which Hiwen Thsang calls Pu-lu-sha-pu-lo or Parashawara, was still a great city of 40 li, or 6½ miles in extent. It is next mentioned by Masudi and Abu Rihan, in the 10th and 11th centuries, under the name of Parashawar; and again by Baber, in the 16th century, it is always called by the same name throughout his commentaries. Its present name is due to Akbar.

One great object of veneration at Parashawara in the first centuries of the Christian era, was the begging-pot of Buddha, now at Kandahar, and called Kashgul-i-Ali. Another famous object was

the holy pipal tree, at 8 or 9 li, or $1\frac{1}{2}$ mile, to the S.E. of the city. This same tree would appear to have been seen by the Emperor Baber in A.D. 1505, who describes it as the stupendous tree of Bagrami, which he immediately rode out to see. It must then have been not less than 1500 years old; it is not mentioned in A.D. 1594 by Abul Fazl in his account of the Gor-Katri in Peshawur.—*Cunningham, Anc. Hist. of India.*

PARASNATH, a mountain in Behar of great sanctity; it is the eastern, as Mount Abu is the western, metropolis of Jain worship and pilgrimage. 10,000 annually, from distant parts of India, visit the scene of Nirvana or 'beatific annihilation' of ten of the 24 deified saints or Tirthankara, who are the objects of Jain adoration; and from the last of these, Parswa or Parswanatha, the hill, originally called Samet Sikhar, took its better known name of Parasnath. It is in the east of Hazaribagh district, and adjoining Manbhūm, Bengal, lat. $23^{\circ} 57' 35''$ N., long. $86^{\circ} 10' 30''$ E. The mountain consists of a central narrow ridge, with rocky peaks rising abruptly to a height of 4479 feet from the level country on the S.W., and throwing out long spurs. It is the highest hill of the range of hills separating Lower Bengal from Behar. Like to Abu on the west, the Jain religionists have covered the summit of this hill with numerous small temples, and the sacred Charan or foot-print is also shown. Amongst the Hindus, the eastern peak is the most noted. On its top, Parasnath obtained nirvan or emancipation from matter. The spot is especially sacred from that circumstance, and forms the holiest place of worship to the sect. The pilgrims climbing to see the last scene of his life and labours, are here shown his foot-prints, marking the spot where he obtained his nirvan.—*Hooker's Him. Journ.* i. p. 18; *Imp. Gaz.; Schlag.*; *Tr. of Hind.* i. p. 200.

PARASOL or Umbrella, a shade from the sun's rays, has been used in eastern countries as an emblem of rank from the most ancient times. The title Satrap of the Greeks is supposed to have been derived from the Ekach'hatra, also Ch'hattrapati, the vaulted horizontal umbrella, which in ancient India was always reserved exclusively for royalty. The Aftabgiri of Muhammadans of Persia and India is a round, flat, vertical parasol, carried to shade persons of rank by special permission of the sovereign, and usually emblazoned with a family device.

PARASU-RAMA, a Brahman, supposed to have lived B.C. 1176, who gave his name to an era, used still on the Malabar coast, from Mangalore to Cape Comorin. He was son of Jamadagni, a Brahman, and was apparently a village hero, but his name is associated with many fabulous Hindu legends. He was descended on his father's side from Bhṛigu, and on his mother Renuka's side from the royal Kusika, and was born near Agra. Parasu-Rama means Rama with the axe, and he was also called Khandu Parasu, who strikes with the axe, and is said to have 21 times overthrown his Kshatriya opponents, which would seem to indicate a prolonged contest for supremacy between the Brahmanical and Kshatriya races. He was a contemporary and an opponent of Rama Chandra, by whom he was overcome. His history is detailed in the Mahabharata, Ramayana, and Bhagavat-Gita. He is fabled to have cut off his mother's

head for some impropriety of her thoughts, but on his father offering him a boon for this, he asked her to be restored to life, also that he might be invincible in single combat, and enjoy length of days. He is fabled to have taught Arjuna the use of arms; is also fabled to have flung his axe into the Arabian Sea, and thus to have reclaimed the present Malabar, which he peopled from the north with the ancestors of the present Namburi Brahmans. He is said to have been a worshipper of Siva; and the cause of his war with Rama was his anger with Rama for breaking Siva's bow. Hindus regard him as the sixth avatars of Vishnu, and his opponent Rama Chandra as the seventh. Renuka, the wife of the Rishi Jamadagni, and mother of Parasu-Rama, is said to be identical with the Gramma-deva Ellammen. The Parasu-Rama era is current on the Malabar coast. At the birth of Christ, 1176 years of the Parasu-Rama era had expired, and the 1177th year began on the 17th August A.D. 1, Julian style.—*Gita*, p. 86; *As. Res.* i. p. 426, iii. p. 68.

PARASURAM BHAAU was defeated at Panipat by Ahmad Shah. See Panipat.

PARASWANATH, the 23d Jaina Tirthankara, is said to have been born at Benares, where he married the daughter of King Prasenajita, and died, aged 100, on Samet Sikhar or Mount Parasnath in the west of Bengal, about B.C. 777. Parasnath is sometimes shown with a snake hood, sometimes as a black man (Samta Parasnathana).—*Ferg. and Burg.* p. 48.

PARATROPIA DIGITATA. Voigt.

P. venulosa, W. & A. | *Araba digitata*, Roxb.

Pa-loo-let-wa, BURM.

A large shrub, native of Circars. Paratropia umbraculifera, Roxb., is a plant of the Moluccas. The Karens make an infusion of the leaves of a species of Paratropia, which they administer for many internal diseases.—*Mason*.

PARAVAR, a dark-skinned, almost black race, in the extreme south of the Indian Peninsula, living in villages along the sea-coast, and earning their bread as fishermen, with nets, lines, and hooks. They own canoes, which they take to sea before daylight, and return about noon. Their ancestors are said to have been converted by Xavier, and they still profess the Romish religion, but they are drunken and dissolute.—*Madras Government Proceedings*.

PA-RA-WA, in Amherst, a hard, red, compact wood, with large fibre, and fit for gun carriages or other similar purposes. It is exempt from attacks of insects. It is used for spears and arrows (a species of *Garcinia*?).

PARBAT, from Parvata. SANSK. A hill near Poona; any mountain.

PARBATI or Parvati, a Hindu goddess, the mountain goddess, wife of Siva. See Kali; Parvati.

PARBATTIAH, a hill people of Nepal, who are arranged into four classes, denominated Awal, Doom, Seoom, and Charum, Persian terms denoting 1st, 2d, 3d, and 4th. The Awal are those peasants who possess five ploughs and upwards; the Doom, such as have from one to five; the Seoom are those who, without being proprietors of ploughs, are considered to be at the head of a few labourers; and the lands of Nepal proper are cultivated, almost without excep-

tion, by Newars; those to the westward, as Noorkale, etc., by the Parbattia tribe, called Dherwara.

PARBHU, a writer caste in the Bombay Presidency, who claim to be pure Kshatriya, and descendants of Chandrasena raja of Malabar. The British in India call them Purvoo.—*Wilson*. See Prabhu.

PARCHA, head priests of the temple of Jaganath, who superintend the collection and disbursement of the revenues of the temple, and also see that the worship is conducted in an orderly manner.

PARCHA. **HIND.** A piece of cloth; also well-gearing. Parcharkar, the art of joining in stone.

PARCHERRY. **ANGLO-TAM.** From Paraiyan, a Pariah, and Cheri, a place. Parai-cheri, a village or quarter or ward of a city occupied by Pariahs; a derogatory name applied by Hindus to all non-Hindus, in the same meaning as M'hlechas.

PARCHMENT.

Parchemin, . . . **FR.** Cartapocora, . . . **Ir.**
Pergament, . . . **GER.** Pergamino, . . . **Sr.**

Parchment consists of the skins of sheep and goats, prepared in such a manner as to render them suitable for being written upon. It is now chiefly employed for charters and other writings where great durability is desirable. The name is from the Latin Pergamena, from Pergamus, the reputed place of its invention. Eumenes II., king of that place (who reigned B.C. 197–159), has the honour of the invention, he being stimulated thereto by the prohibition of the export of papyrus from Egypt; but Herodotus says skins were commonly used for that purpose in his time; and it is even asserted that the word Pergamena was not used until several centuries after the death of Eumenes. Layard says (Nineveh, ii. p. 151) the Egyptians used it occasionally as early as the 18th dynasty. According to Mabillon, the first writer who used the term is Tatto, a monk of the 4th century; before his time, the word Membrana was employed, as in the Greek Testament, 2 Timothy iv. 13. Following on the tables of stone used by Moses, the Jews used rolls of skin for their sacred writings.

Vegetable parchment, or ametastine, applicable for legal deeds, is made from water-leaf or unsized paper, and it acquires its peculiar properties by being dipped in diluted sulphuric acid, the strength of which must be regulated to the greatest nicety. It is one of the most unalterable and unchangeable of manufactured substances. It takes writing ink and dyes very readily, and, from its perfect surface, receives varnish without being sized in the first instance.—*Faulkner; Tomlinson*.

PARCHMENT. The coffee bean has three coverings,—(1) the outer pulp, within which is (2) the parchment, of a faint straw colour, which surrounds the coffee beans, and (3) the silver skin, semi-transparent, which adheres closely to the seed.

PARDAH. **HIND., PERS.** A screen. Pardahnashin, a screened person, a woman who is secluded. It is a curtain, a cotton cloth with white and blue stripes, used for curtains, etc. The word Pardah, which means curtain or veil, is often metaphorically used, and implies that seclusion in which many females in India live; but in cases where ladies transact business, the expression must be taken literally, as they are seated behind a curtain, where they hear and are heard, and

through the openings of which they see without being seen.—*Malcolm's Central India*, i. p. 279.

PARDANTHUS CHINENSIS. Ker.

<i>Ixia Chinensis, Linn.</i>	<i>Foraria crocea, Salisb.</i>
<i>Morea Chinensis, Thunb.</i>	
Shie-kan, . . . CHIN.	Belam-konda-sulal-mani,
China leopard flower, ENG.	MALAKA.
Tiger lily, . . . "	

A native of Nepal and the Himalaya, and common in gardens, being a very ornamental flowering shrub. It has a showy yellow and orange flower, whose petals are spotted like a leopard's skin. It is very commonly cultivated by the Burmese. It is used in medicine. The dark, irregular rhizomes of this and other iridaceous plants are sold in China under the name of Shie-kan.—*Mason*.

PARDESI. **HIND.** A foreigner, a stranger. In Southern India, the northern Hindus are so termed by themselves; and by the southern people, the term is equivalent to foreigner, as from Northern India.

PARDHAN or Pradhan, ministers of a native court; in Bengal, village authority.

PARDHI, a sportsman or fowler, a hunter race in the south of India, called also Harn-pardhi, also Shikari, but who call themselves Bhowra.

PARDHI, in the Maiker district, are cultivators, also wood-cutters; this race are part of the Gond.

PAREIRA BRAVA. Linn.

Wild vine, Velvet leaf, **ENG.** | Grieswurzel, . . . **GER.**
A medicinal root, procured from the *Cissampelos pareira*, a native of the West Indies and South America.

PAREYO. **SINGH.** Literally strangers, also called Widiyetto, or people of the highroad, a race near Badulla in Ceylon, supposed to be the descendants of Portuguese captives with women of rank of the country, degraded for crimes, or made slaves after the re-conquest.—*Ten*. ii. p. 267.

PARGANA. **HIND.** A district, a tract of country, including a number of villages; a subdivision of a district or province.

PARHARRI, servants of the Hindu idol Jaganath, who dwell within the holy land of the temple, and guard the seven inner doors of the pagoda, attend during the day, and watch over it at night; they present pilgrims to Jaganath.

PARHEYA, a race in Palamow, the mere remnants of a tribe who once formed an important part of the population. They vary largely in physical appearance. At Ramkunda in Palamow, two might have been classed as Negro, two as Mongolian. The Negro type were dark and prognathous; the latter bright copper-coloured, with flat, broad faces, and slightly oblique eyes.

The Parheyas have a tradition that their tribe formerly held sheep and deer sacred, and used the dung of those animals to smear floors with, as they now use cow-dung.—*Dalton, Ethnol. of Bengal*, p. 131.

PARI. **HIND., PERS.** A fairy. Parizad, born of a fairy, a beautiful woman; the people of the valley of Peshin in Segestan worship fairies. Pari Sosan, maiden-hair.

PARIAH or Pariar.

Holeyar, . . . CAN.	Paraiyan, . . . TAM.
Dher, . . . HIND.	Paraiyar, . . . "
Mhar, . . . MAHR.	Paraiyadi kiravan, "
Paravan, . . . MALAKA.	Malla vadoo, . . . TEL.

Pariah is a Tamil term, applied to an aboriginal people scattered throughout Southern India, often

adhering to a Shamanism. They are permitted to marry into each other's clans. They are regarded by the four castes of Hindus as of very low grade, but they are not out-castes, or men who have been expelled from other castes. They are not the Madiga Wanlu of Telingana, or Chakkili of the Tamil, or Mang of the Mahrattas, nor Chamar of Northern India, who are shoemakers or workers in raw hides, and still eat creatures which die from disease, and other animals that most races regard as unclean, and who in villages perform the lowest menial offices, such as messengers and scavengers, and are paid by portions of the crops and some small privileges, but are not permitted to reside within the village. The Pariah, however, are usually the serfs of the Sudra agriculturists. Those in the large towns, in the employ of the Europeans in Southern India, are quick, intelligent, and active. The race is emigrating with great rapidity to the West Indies, Mauritius, Cape Colony, and the Burmese provinces, etc., where all sectarian or social distinctions are unknown. There are said to be thirteen subdivisions amongst them. The Pariah are not the lowest of the aboriginal races. Even in the Tamil country there are ten castes who are lower in the social scale than the Pariah, and from these are excluded the Pallar, who dispute precedence with the Pariah. The Pariah constitute a well-defined, distinct, ancient race, independent of all others, and has its own subdivisions, its own peculiar usages, its own traditions, and its own jealousy of the encroachments of the castes which are above it and below it. And the Pariah, whom St. Pierre's romance has fabled as a mild, benevolent, subdued being, whenever he has an opportunity, is as severe on other sects as from the custom of the world we would surely expect. Several of the aboriginal races of the S. of the Peninsula have race or tribal titles; that of the Pariah is Samban, which means deity. The term Pariah is supposed by Professor Wilson to have its origin in the Tamil, Parai, a drum, as they are often the village musicians. Along the border country of the Nizam's territories, and in Berar, the Hindus style the Mhar and Dher or Pariah, Christians, the word being pronounced Kirsan. The Dher or Dhed of the Dekhan is employed as a watchman and messenger in the village establishments. In the Dekhan the Dher is identified with the Mhar. In some places he performs the duty of scavenger. In the Saugor territory, the Dher are said to eat dead animals, clean the skins, and sell them to the Chamars or tanners.

The Holiya of the Canarese country is a low man, an out-caste, commonly an agricultural labourer; the term is from Holi, a field; and in several districts he is a predial slave, being saleable by the owner of the estate on which he is located, either with or without the land. He is described as a predial slave in Canara and Coorg; in the former he is said to be a subdivision of the Dher, in the latter one of three principal classes of slaves called Holiyar, Yemaru, and Paleru. In both countries the Holiyar are distinguished by various demonstrations prefixed, which are variously written, and the meaning of which is not explained, as—Maury Holiya, Byr Holiya, Murtha Holiya, Bulgi Holiya, Kembutta Holiya, Badaya Holiya, Rookhee Holiya; of these, the only peculiarities noted are, that the Kembutta

Holiya is native in Coorg, the rest are natives of Carnata. The Holiya are generally a more faithful class of slaves than others. Amongst the Mare Holiya, the custom of succession through the female line prevails. The Holiyar of the Canarese-speaking districts in the centre of the Peninsula are the village servants, watchmen, and the like, and are a willing, honest race.

PARI CHARAK. TAM. Superintendent of a temple. See Parcha.

PARI JATAMU or Para jatamu. SANSK. A celebrated tree, in Hindu mythology said to have been produced at the churning of the ocean, and to have been grown in Swarga, Indra's paradise. W., p. 529, has *Erythrina Indica*, or the coral tree; Br., p. 591, the same, and also the *Amaranth* and *Mimusops elengi*, also *Nyctanthes arbor tristis*, adding that it is a genuine name for all flowers with a jasmine scent. In the *As. Res.*, W., p. 244, Sir W. Jones states that it is given to several different genera quite distinct from each other. Mr. Elliot heard it assigned to *Cochlospermum*. The Hindu fable is that Krishna, at the instigation of his wife Satya Bhama, stole it from Swarga, and took it to Dwaraka, but after his death it returned to Swarga.—*As. Res.* xi. p. 134.

PARIKSITI. A story of Pariksiti is still prevalent in the Hindu family circle. He was a Puranic hero who was doomed by a sage to die of a snake-bite. In order to escape this fate, he retreated to a barren island, believing that the serpent could not ford the water, and he would be quite safe. But the serpent, having assumed the form of a lemon, swam over to the island. The lemon was beautiful to behold, and he could not resist the temptation of smelling it. Having done so, the lemon bit the nose of Pariksiti, and he fell into a swoon and died. The legend guides the Hindus in their daily life. The serpent-god hears, it is said, the prayers of the devotee, whose house he occasionally visits. A superstitious woman, filled with awe and fear, instead of turning the venomous god away, beseeches him to retire, and when the god dilates his hood, and aways it to and fro, she thinks that it thereby promises her safety. She will not allow her children to smell a lemon, however fragrant it may be, and warns them that the serpent-god may transform himself into a lemon and bite their noses.

PARILOKA. HIND., SANSK. The future world, heaven; literally another place.

PARINARIUM EXCELSIUM, one of the Pomaceæ, a large tree brought to Bombay from Goa; the fruit, which ripens in December and January, resembles a coarse plum, and is held in much estimation. Colonel Beddome found *P. indicum* at 2000 or 3000 feet on the Wynad slopes, Malabar, Carcoor ghat, and vicinity.—*Riddell*.

PARINDA. HIND., PERS. A light boat of Kashmir; a bird.

PARISHAD, a community or college of Brahmans associated for the study of the Vedas.—*D.*

PAR-i-TAOS, literally peacocks' feathers, a sort of pashmina or shawl-wool cloth of two colours.

PARITIUM MACROPHYLLUM, *Bet-mwasha*, BURM. A plant of Burma which furnishes a useful fibrous material for ropes, being long, soft, pliant, and strong; colour brown.—*M. F. J. Reports*.

PARITUM TILIACEUM. *St. Hil.*

<i>Hibiscus similis</i> , <i>Blume.</i>	<i>H. tiliaceus</i> , <i>Linn.</i>
<i>H. elatus</i> , <i>D. C.</i>	<i>H. tortuosus</i> , <i>Roxb.</i>
<i>Bola</i> , <i>BENG.</i>	<i>Paruti</i> , <i>Tali Pariti</i> , <i>MALE.</i>
<i>Lye-nya-sha</i> , . . . <i>BURM.</i>	<i>Belli-patta</i> , . . . <i>SINGH.</i>

The banks of tide-water streams of Burma are often damasked with the changeable red and yellow flowers of this large luxuriant bush. It is common also on the Malabar coast, and supposed not to differ from *H. arboreus*, the Maho tree and Mohaut of the West Indies. The fibres of its inner bark are employed for cordage by the inhabitants of the South Sea Islands and by the American Indian; it is said to gain in strength when tarred. The Otaheitan make fine matting from it, and likewise manufacture it into ropes and cords.—*Mason; Royle.*

PARIVRAJAKA, a religious mendicant; a Brahman in the fourth stage of his religious life.—*Dowson.*

PARIWARA ISLAND natives closely resemble other Papuans to the eastward, but are smaller in stature, and wear the hair frizzled up into a mop projecting backwards.—*Macgillivray's Voyage*, i. pp. 293, 294.

PARJI, the servants of the village community of Hindustan. In Faizabad, they comprise the blacksmith, carpenter, barber, washerman, and shoemaker. See *Baloti*.

PARKA. *HIND.* The copper receiver of a still, kept cool in water; in this the spirit accumulates.

PARKARMA. *SANSK.* In Hinduism, the religious circuit of any shrine or holy place; a circumambulation, otherwise called *pradakshana*.

PARKES, **SIR HARRY**, for some years *Her Britannic Majesty's minister* at the court of China. His term of office included the episode of the treaty of Tien-tsing, the first and second opium wars, the outrage on the *lorcha Arrow*, and the important negotiations which followed the arrival of Lord Elgin, in company with Sir Thomas Wade, Sir Rutherford Alcock, and General Gordon. For eighteen years he has represented Great Britain in Japan. He underwent cruel sufferings in China through the treachery of General Sankolinsin.

PARKHAR, a district north of the Runn of Cutch, the words *par* and *khar* meaning beyond, and salt desert. The *Thur* and *Parkhar* districts are occupied almost equally by *Muhammadians* and *Hindus*, subdivided into classes. They generally used a mixed language called *Dati*, composed of *Sindi*, *Marwari*, and *Gujerati*, though *Gujerati* is in use in some parts of the district. In manners and customs they resemble the *Cutchi*. They are chiefly occupied in cattle-breeding and as graziers. The *Muhammadians* are *Syuda*, *Baluch*, *Brahui*, *Jat*, and *Summa*. The *Hindus* are *Brahmans* and *Soda*. There are also 25 commercial tribes, 5 out-caste races, the *Mengwar*, *Bhil*, *Koli*, *Bala-Shahi*, and *Shikari*; and 13 miscellaneous tribes, *Shaikh*, *Memon*, *Kumbrani*, *Gudda*, *Bujeer*, *Mohana*, *Jokiah*, *Dookur*, *Koliah*, *Amunda*, *Bhopa*, *Mahur*, *Hakra*. In the *Thur* and *Parkhar* district, only 9 inhabitants to the square mile.

PARKIA, a genus of plants named in honour of Mungo Park. The genus contains only a few unarmed trees of the west coast of Africa, the Peninsula of India, Sylhet, and in the islands to the eastward to Bay of Bengal. *Parkia Africana*

is the *Nitta* or *Doura* tree of Soudan. The farinaceous matter surrounding the seeds is eaten, and also made into a pleasant drink when steeped in water. The seeds are roasted as coffee, then bruised, and allowed to ferment in water. When they begin to become rotten, they are well washed and pounded, and the powder is made into cakes resembling chocolate, which form an excellent sauce for all kinds of meat.—*Brown*, in *Denham*, quoted in *Eng. Cyc.*; *Voigt*.

PARKIA BIGLANDULOSA. *W. and A.*

Mimosa pedunculata, *Roxb.*

Chendu phool, . *HIND.* | *Sambrani manu*, . *TEL.*

A large and elegant tree introduced into India from Africa. It is one of the best trees for avenues. It requires care and water regularly. The flower-buds resemble balls of red velvet. The wood is hard and promising; it is surrounded by an astringent bark. The sweet and farinaceous pulp within the pods is highly esteemed, and made into sweetmeats. The natives also make a pleasant drink by diffusing the farina through water.—*Voigt; Riddell; Cleghorn*, in *M. E. J. R.*

PARKIA ROXBURGHII. *G. Don.* *Mimosa biglobosa*, *Roxb.* A tree of Assam and Sylhet; wood not known.—*Voigt*.

PARKINSONIA ACULEATA. *Linn., D. C.*

Barbadoes flower fence, . *Vilaiti kikar*, . . *HIND.*

Jerusalem thorn, . *ENG.* | *Adanti*,

Genet epineux, . . *FR.* | *Sina jilaga*, . . . *TEL.*

A small graceful tree of the West Indies and South America, domesticated in India. It grows 12 or 15 feet high, and is seen everywhere in the Peninsula, springing up with less care than any other tree, needing little water, and furnishing abundant cuttings for fuel. It is very generally employed as an ornamental plant, and for the construction of hedges, for which its strong spines render it well adapted. The flowers are large, yellow, very numerous, and a little variegated with red spots, and are succeeded by long, narrow, knotted pods. It grows readily from seed; the stem from which the leaves spring is capable of being converted into a white fibre. Some of it was sent to the Exhibition of 1851, as a material for paper-making, and could probably be afforded at a cheap rate, from the cuttings of the shoots of this plant.—*Drs. Voigt; Riddell; Royle's Fib. Pl.* p. 288; *Stewart's Punjab Plants; Eng. Cyc.*

PARLA KIMEDI, an ancient zamindari (landed estate) in Ganjam district, Madras; the largest in the district, extending over an area of 993 square miles, including 354 square miles of *maliya* or hill country. Population (1871), 250,978, inhabiting 47,341 houses and 1043 villages. The estate pays a *peekhash* (fixed revenue) of £8782, the proprietary income being returned at £46,500. The zamindars claim descent from the royal house of Orissa Gajapati (*Gangavansa*), and take precedence in the district. Eleven hill chiefs called *Bissaye*, and 23 smaller lords called *Dora*, owe feudal allegiance and pay tribute to the raja.—*Imp. Gaz. vii.*

PARLOCA. *HIND., SANSK.* The future world, literally another place.

PARM. *SANSK.* A dot, a symbol of the Supreme Being, *Parm-Eswar*. See *Chank*.

PARMELIACEÆ. The lichen tribe of plants, the *Lichenaceæ* of Lindley, are perennial plants, often spreading over the surface of the earth on

rocks or trees, in dry places, in the form of a solid and foliaceous, or hard and crustaceous or leprous substance called a thallus. Many of the same species are found in different parts of the world; the lichens of N. America differing little from those of Europe, and almost all those collected by Dr. Royle in the Himalayas were found by D. Don to be identical with European species.

Usnea florida, Ach., syn. of *Lichen floridus*, L.
U. barbata, Ach., syn. of *L. barbatus*, L.
Borreria ciliaris, Ach., syn. of *L. ciliaris*, L.
B. ashnehi, Royle, Chulchilhera.
B. furfuracea, Ach., syn. of *L. furfuraceus*, L.
Rocella fuciformis, Ach., syn. of *L. fuciformis*, L.
R. tinctoria, Ach., Orchil.
Cetraria Islandica, Ach., Iceland moss.
C. nivalis, Ach.
Alectoria uaneoides, Ach.
Cladonia rangiferina, Hoffm.
Ramalina farinacea, Ach., syn. of *L. farinaceus*, L.
Gyrophora murina, Ach., syn. of *L. murinus*, Ach.
G. deusta, Ach.
G. pustulata, Ach.
Peltidea canina, Ach., syn. of *L. caninus*, L.
Parmelia perlata, Ach., syn. of *L. perlatus*, L.
P. caperata, Ach., syn. of *L. caperatus*, L.
P. physodes, Ach., syn. of *L. physodes*, L.
P. saxatilis, Ach.
P. omphalodes, Ach.
P. encausta, Ach.
P. conspersa, Ach.
P. parietina, Ach.
P. Kamtschadalis, Esch.
Sticta pulmonaria, Ach., syn. of *L. pulmonarius*, L.
S. scrobiculata, Ach., of *L. scrobiculatus*, L.
S. pulmonaria, Ach.
Stereo-caulon paschale, Ach., syn. of *L. paschalis*, L.
Lecanora parella, Ach., Orseille de terre. Perelle d'Auvergne.
L. tartarea, Ach., Cudbear.
L. hæmatomma, Ach.
L. atra, Ach.
Variolaria lactea, Ach.
Urceolaria scripta, Ach.
U. cinerea, Ach.
Isidium Westringii, Ach.
Lepraria chlorina, Ach.
Solorina crocea, Ach.

Some lichens are useful to man as food and medicinally; others, after maceration in urine, can be employed as dyes, the chief dye plants being the *Lecanora parella*, also the purple powder of *L. tartarea*, or cudbear, from Cuthbert, who introduced it; *P. hæmatomma*, *Rocella tinctoria*, and *R. fuciformis* furnish the orchil or archill dye, called also Orseille des Canaries. The *Borreria ashnehi* is a common dye in India. The nutritive properties depend on the presence of an amylaceous substance analogous to glutone, which Berzelius says exists in the form of pure starch or amylaceous fibre to the amount of 80·8 per cent. in *Cetraria Islandica*.—*Voigt; Eng. Cyc.* See *Dyea*.

PARMELIA KAMTSCHADALIS. Esch.

Shih-jui, . . . CHIN. ? | Charcharita, . HIMALAYA.
 Chalchalira, HIMALAYA. | Aushne, . . .
 This lichen is found in the Panjab bazars, and is probably gathered in the Himalaya. It is used as a dye, and is also officinal, being given as a stimulant to digestion, and on the Yunnan system in mania, as a diuretic. Honigberger states that it is also administered in disorders of the stomach and womb, and in cases of calculus. It is also said to be used for purifying the blood, and as a bitter tonic and astringent, and used in intermittent fever and hæmorrhage.—*Stewart; Powell*.

PARM-NARM. HIND. A name given by Akbar to the fabric of ibex wool, the Shah-tus.

PAROPAMISUS, a name applied by the ancient Greeks and Romans to the mountainous region between Herat and Balkh on the N.W. and Ghazni and Kandahar on the S.E. In this extent it comprises what are now known to be several distinct ranges, and the old name has ceased to be used. This mountainous region extends 350 miles from east to west, and 200 from north to south. It is so difficult of access, and so little frequented, that no precise accounts of its geography are to be obtained. The eastern half is inhabited by the Hazara, and is cold, rugged, and barren; the level spots are little cultivated, and the hills are naked and abrupt. The western part, which belongs to the Aimak, though it has wider valleys and is better cultivated, is still a wild and poor country. The northern face of these mountains has a sudden descent into the province of Balkh; their acclivity is less on their other extremities, except perhaps on the west or south-west. On the north-west they seem to sink gradually into the plain which borders on the desert. The slope of the whole tract is towards the west. To the north of this, extending eastwardly and to the west, are the elevated plains of Tartary, the Asiatic dominions of Russia, Chinese Tartary, and China, and the regions occupied by several Turkoman nations. Part of the mountains N.W. from India was also called the Paropamisus or Hindu Kush; and Imaus and Hindu Kush seems to have been identical terms. The true Imaus, however, is the ridge which separates Kashmir from Little Tibet. It appears to incline, in its northern course, towards the continuation of the Hindu Koh, and even to join it. The term Hindu Koh or Hindu Kush is not applied to this ridge in its whole extent, but seems to be confined to that part of it which forms the N.W. boundary of Kabul, and this is the Indian Caucasus of Alexander. There is, however, much confusion, owing to the use of Tibetan, Chinese, and Persian names for that great mountain mass.—*Lassen on the Kings of Bactria; Rennell, Memoir*, p. 190; *Elphinstone's Caubul*, p. 430; *Vigne's Narrative*, p. 193; *Wh. Hist. of I.* p. 419; *Porter's Travels*, i. p. 162.

PARRA, a genus of tropical birds belonging to the family Parridae, the sub-family Parrinæ, the Jacanas, as under:—

Sub-Fam. Parrinæ.

Metopidius Indicus, Latham, the bronze-winged Jacana, all the East Indies.
Hydrophasianus chirurgus, Scopoli, the pheasant-tailed Jacana, Ceylon, India.

The genus Parra is restricted to birds from South America; but Adams speaks of a water-pheasant (*Parra Sinensis*) which was shot on the river near the head of the valley of Kashmir.—*Adams*.

PARRA. TEL. A measure of capacity, fixed at 4000 inches = 5 marakal.

PARRAKEET, birds of the tribe Scansores and genus Palæornis. A sub-family of birds of the parrot family or Psittacidæ, peculiar to the eastern hemisphere, found in the tropical regions of Africa, Asia, and Australia.

PARROT.

Perroquet, FR.	Papagayo, SR.
Papagai, GER.	Kili pooli, TAN.
Tota, HIND.	Chiluka, TEL.
Pappagallo, IT.	

The parrots are arranged by naturalists in the

PARROTIA JACQUEMONTIANA.

family Psittacidae, belonging to the climbing tribe of birds, and divided into six sub-families, as under:—

Psittacinae, true Parrots.
Loriinae, Lories.
Palaeorninae, Parrakeets.
Platycercinae, Australian Parrakeets.
Aratinae, Macaws of America.
Cacatuinae, Cockatoos of Australia and islands.

Palaeorninae or Parrakeets.

Palaeornis Alexandri, Linn., all India.
P. torquatus, Bodd., Tropical Africa, all India, Ceylon.
P. rosea, Bodd., all India, Burma.
P. schisticeps, Hodg., Himalaya, Bengal, Sylhet, Assam.
P. columboides, Vigors, Malabar coast, Neilgherries.
P. Javanicus, Osbeck, all India to Java.
P. calthropæ, Layard, Ceylon.
P. caniceps, Blyth, Nicobars, Penang.
P. erythrogenys, Blyth, Nicobars, Andamans.
P. longicauda, — ? Sumatra, Malayana.
P. modestus, Fraser, — ?
P. viridimystax, Blyth, — ?

Loriinae or Lories.

Loriculus vernalis, Sparrm., the love-bird or Indian Lorikeet of Malabar, the Sub-Himalaya, Bengal, Sylhet, and Burma.
L. galgulus, — ? Malay Peninsula.
L. Asiaticus or *Indicus*, — ? Ceylon.

Other species in China and E. Archipelago—

Psittinus Malaccensis, — ? Malay Peninsula.

Cacatuinae or Cockatoos:

a. White, with large crests, from the Moluccas and Australia.
b. Black, of Australia and islands near, forming the crested genera *Microglossum* and *Calyptorhynchus*.
Nestorinae have dingy plumage and square tail.
Psittacinae have short and even tail.

PARROTIA JACQUEMONTIANA. Dec.

Killar, Kirru, Pare, CHEN.	Killar, RAVI.
Wych hazel, ENG.	Sha, SUTLEY.
Paher, Pishor, JHELM.	Spileoha, TR-INDUS.
Pahu, Po, KANORA.	

A shrub of some size, which grows abundantly in many places on most of the rivers up to the Indus, as well as more sparingly beyond it, at from 2800 to 8000 feet. It is generally seen in clusters and thickets, the stems ranging up to 12 or 15 inches girth, and 15 or 20 feet high. The leaf resembles that of the hazel, for which this plant has frequently been taken by Europeans, although the fruit is very different. In some places its leaves are said to be browsed by cattle. The wood is hard and strong, and makes good pegs, native bedsteads, rice-pestles, walking-sticks, etc.; and Vigue states that he had an excellent flute made in England of its wood. The twigs are used for binding loads, making baskets, etc.; but the chief use of the plant is for the twig-bridges, often spanning 300 feet. These are in most places made of *Parrotia* twigs, either wholly or mostly, *Cotoneaster*, *Olea*, and *Indigofera heterantha*, *q.v.*, being sometimes mixed with these. For the bridges, etc., *Parrotia* is cut at all seasons, but is not very lasting, requiring frequent piecemeal renewal. Longden mentions a birchen *jhula* at Koksar, since replaced by a bridge; and willow is stated to be employed in Spiti, Ladakh, etc. Near Muzaffarabad there were several bridges of the same construction (viz. one longitudinal rope to walk on, and two lateral ones to hold by, connected with the former by thinner ropes), but made of twisted hide, and one was mentioned by Hutton in Kanawar made of yak's hair. *Parrotia Persica*

PARSEE.

grows in Persia and Kashmir, and furnishes a very hard wood.—Dr. J. L. Stewart, M.D.

PARSA. HIND. With Hindus a portion of grain set aside to appease evil spirits, which becomes the perquisite of the gorait or watchman.

PARSEE, a name given to the Zoroastrians, now scattered through different parts of Southern Asia, but principally located in Bombay and Gujerat. They are called Parsee because they came to India from Pars or Fars, the province of Persia known as Persia by the Greeks. They are of that Aryan race who in primeval times dwelt in Aryana-Vaejo, the old Aryan home believed to have been on the banks of the Araxes, near where the city of Atropatene afterwards stood, far north of India, where winter reigned for ten months of the year. The race parted into two great branches: the East Aryan or Brahmanical moved towards India, and the West Aryans, whom the modern Parsees represent, journeyed westwards. The great bulk of the Aryans in Persia adopted Muhammadanism when overthrown by the Arabs, and a small remnant, adhering to their Zertushtrian religion, left their country. The emigrant Parsees retreated to Khorasan, where they remained for a hundred years; afterwards retreated to Hormazd or Ormuz in the Persian Gulf, where they remained for 15 years, and then sailed for Diu, a small island to the N.W. of the peninsula of Gujerat. After a few years they sailed to Sanjan at the S. extremity of Gujerat province. A small remnant race exists in Yezd. In Persia, in 1881, there were only 500 families who were subject to the Jazia or poll-tax, could not wear white robes, could not build a new house, could not appear on horseback, had to pay transit dues on passing from place to place with goods; instances were occurring of girls and women being forcibly converted to Muhammadanism; a convert could claim all the heritable property; in purchasing land, one-fifth of its value had to be paid as fees to the mullas.

Being persecuted and annoyed by the Muhammadans, most of their countrymen have emigrated to India. A handful of persecuted exiles, living in a foreign land, surrounded for 1200 years by idolatry, and persecuted at times by religious fanaticism, the Parsees have still preserved their national type and character and their original worship. Though they have not altogether escaped contamination, and have adopted many superstitious ceremonies and notions of the Hindus, they have always recoiled from degenerating to the worship of idols, and have clung tenaciously to the idea that they were worshippers of only the invisible Hormazd, the great God. The Parsees believe in the existence of angels, created by God, and having the power given them to assist and benefit mankind. But they centre their prayers and their hopes, above all, in Hormazd. Their whole morality is comprised in three words,—Pure thought, word, and deed; their reward and punishment depends upon their fulfilment of this injunction, and their pardon on the will and mercy of God. The worship of fire, and the ordinary receptacle of the sacred fire, is called *Adurian*, the more expensive places, of which there are six in India, being called *Atash-bahram*. They now have a heaven; and the place to which the souls of the good go, is *Guraman Bahasht*.

They have a hell, called *Dozakh*, which they describe as a dark place with fiends, and where *Ahriman* or *Shaitan* dwells as the arch-fiend. They are strict in their ritual observances, particularly those inculcated for purification. The *kusti* or sacred thread has frequently to be removed from the person; and their families, like those of the Jews, *Muhammadans*, and *Hindus*, dwell in rooms apart. They have 101 attributes or names of the deity. Before prayer they wash their hands and feet, take off the *kusti*, pray, and again fasten the *kusti*. In their prayer, they first recite the *Saroshbaz*, *Sarosh* being an angel in heaven. They then pray to *Khurshad*, the sun, to an angel named *Mahir* (*Mibir*? the sun), and to *Hormazd*, the beneficent principle. Women also usually pray. While they were still dwelling in *Bactria*, *Zertusht*, known to the western world as *Zoroaster*, reformed the *W. Aryan* worship. *Zoroaster's* reform in *Bactria* occurred about the time of *Menes*, or about 3500 B.C. The *Parsees* of *India*, however, maintain and quote as their authority (*Haug's* translation) the *Gathas*, and the good principle is distinctly noticed in the *Gathas*, songs of *Zertusht*. He is altogether distinct from another *Zoroaster*, the *Median* conqueror of *Babylon*, who vanquished the realm and city of the *Chaldees*, and founded the second *Babylonian* dynasty in the year 2234 B.C. He was a priest of the fire-worshippers at a time when the doctrine of a duality of good and evil was already in vogue, though the name of *Ahriman* does not occur in the oldest records. What is understood by evil is evil thought (*Ako mano*), or falsehood; and this is contrasted with good thought, which is identical with the good principle, and is now known as *Hormazd* or *Hormazd*. An absolute personification of the good principle is, however, hardly to be found in the songs of *Zertusht*.

In *British India*, they object to the term fire-worshippers, but the *Zoroastrian* religion there has become the distinguishing mark of a caste rather than a living faith, while their versatility, intelligence, and general aptitude for business have made them a wealthy and influential body. They do not proselytize, have only recently relaxed a little towards nine of their own race, but they still resist the admission of hundreds of others who, being descended from *Parsee* fathers and *Hindu* or *Musalmani* mothers, wished also to be invested with the sacred thread. The excluded body conform in all externals to *Zoroastrian* rules, and call themselves *Parsees*, but the right to join in public worship has been steadily refused them, till nine persons were invested with the thread by a *Dustoor* in presence of a thousand *Parsees*.

The *Parsees* have the *Zend* and *Pahlavi* names of 21 books which they suppose *Zoroaster* to have produced, but of which the major part have been lost. Their *Zendavesta* consists of—(1) the five *Gatha* or songs and prayers (in metres resembling *Vedic*), which alone are thought to be the work of *Zoroaster* himself, and form part of the *Yazna* or *Yajna*, written in two dialects, the older of which *Dr. Haug* called the *Gatha*; (2) the *Vendidad*, a code of laws; (3) the *Yasht*, containing hymns to the sun and other deities. There is another portion called the *Vispard*. A note in the *Dinkard*, an ancient *Pahlavi* work, however, says the *Avesta* has three parts—(1) the

Gatha, in verse, and treating of the invisible world; (2) the *Date*, in prose, and giving rules of conduct; and (3) *Mathre*, comprising prayers and precepts, and giving an account of the creation. The *Vendidad*, the *Yazna*, and the *Vispard* survive, and are collectively known as the *Vendidad Sade*; also the *Ogum Decha*, the *Khurdah-Avesta*, and the *Yashts*, with fragments of the *Vistasp*, *Hadokht*, and *Damdad* books. The *Izashne*, *Vispard*, *Khurdah-Avesta*, and *Yashts* are books of prayers.

The *Ahuna Vairya* or *Honover* is the especial prayer offered by the *Parsees* to the Supreme God, as a benediction. It is—

'Yathā ahū vairyo.
Athā ratus ashāt chit hacha.
Vanheus dardā mananhō shyao thēnanām.
Aneus Masdai Khshathrēmcha Ahurāi.
Ayim dariğbyō dadhat Vāctārēm.'

Professor *F. Spiegel* translated it, and from his *German*, *A. H. Bleek* rendered it into *English*—

'As is the will of the Lord, so (is He) the ruler out of purity.
From *Vohu-manō* (will one receive) gifts for the works (which one does) in the world for *Mazda*.
And the kingdom (we give) to *Ahura* when we offer succour to the poor.'

The *English* translation from *A. Franck* and *J. Oppert's* *French* version is as follows:—

'Like the Verb of the Supreme Will, emanation exists only because it proceeds from truth. The creation of what is good in thought or act in the world belongs to *Mazda*, and the reign is of *Ahura*, whom the Verb has constituted the destroyer of the wicked.'

Professor *Max Müller* says (vi. p. 176): 'A *Parsee* believes in one God, to whom he addresses his prayers. This God has neither face nor form, colour nor shape, nor fixed place. He is himself alone, and of such glory that we cannot praise or describe him, nor our minds comprehend him. Whoever believes in any other God but this is an infidel.' The *Zertushti* catechism says: 'If any one commit sin under the belief that he shall be saved by somebody, both the deceiver and the deceived shall be damned to the day of *Rasta Khez*.' 'Your Saviour is your deeds, and God himself, he is the Pardoner and the Giver.'

Amashashpand.—In the existing *Parsee* religion seven *Amashashpand* are supposed to exist; they are called the immortal holy ones. These cannot be regarded as the elements.

The *Ardebehest-Jasan* festival is maintained in honour of *Ardebehest Amashashpand*, the controlling angel, according to their theology, over their sacred fire. On this day the *Parsees* crowd their fire-temples to offer up prayers to the Supreme Being.

The *Ava Ardui Sur Jasan* festival is held in honour of *Ava*, the angel, in their theology, who presides over the sea. On this day, *Parsees* should approach the sea-shore or any stream of water, and chant prayers from the *Zend*; but these people now generally mix with their prayer several *Hindu* rites, such as offering flowers, sugar, coconuts, etc. In *Bombay*, a fair is held on the esplanade on this day.

The *Amardad-sal* holiday is held on the day following the *Khurdad-sal*, of which festival it is merely a continuation. *Amardad* is from *Amere-*

tat, immortality, the seventh Amsshashpand of the Parsee.

There is a Parsee sect known by the name of Shapoo, who, like the Zoroastrians, pray while standing looking to the sun and near water. They never talk with anybody barehead, etc. The admission of an individual into the Parsee faith is indicated by the assumption of the Sadaro or shirt.

Parsee festivals are celebrated with but little show. Their day is divided into watches termed gah, of which there are four in winter and five in summer. Each gah has a heavenly watcher and its own special prayers. Pateti Naoroz, or New Year's Day, is held on the 1st of Farvardin, celebrated in honour of Yezdejird, the last king of the Sassanian dynasty. On this day alms are given, and congratulatory visits paid, in which the Hamai-jor or hand-joining is practised. Rapiwar, on the 3d of Farvardin, is in memory of Ardiবেহেষ্ট; Khurdad-sal, in memory of Zoroaster.

Physicians who attend Parsee patients are always charged (if the cases are likely to terminate fatally) to give timely warning to the friends of the sick man. When it is believed that he is drawing near his end, the sacred Hom water is given to drink, and, when life departs, the attendants place the body on stones, in a lower chamber, from which everything else has been removed, and wash it with warm water. The reasons given for the removal to the ground are various, but the one ordinarily accepted amongst them is that a dead body is an unclean thing, necessitating that all who touch it must destroy their clothes, and whatever it touches must be destroyed. With these views the dead in Bombay are carried by a class of Parsees called Nessus Salar, Nessus meaning unclean. These men carry the remains to the dokhma or tower of silence, on the floor of which they lay it. The dokhma is without any roof covering, is open to the sky, so that birds of prey, vultures, kites, and crows have the freest approach. The raised floor has a deep well surrounded by a platform, with channels converging to the well. The dead are carried within on an iron bed, from which they are removed and placed on a partition of the platform, and the fluids resulting from its decomposition flow along the channels into the well; but after a time the remnants of bones are also swept into that excavation. This mode of disposing of the dead is universal among the Parsees whenever they are able to give effect to the arrangements. A small dokhma will cost Rs. 10,000 or Rs. 15,000. When the well is full, the bones are removed and buried outside the dokhma. After the demise, before removal from the house, a dog is brought near to gaze on the departed. This is the Sag-did, or dog-gaze, and its object is variously explained,—anciently, it is said, because the dog's intelligence could show whether life was extinct; but at present the notions are that the dog's presence secures the passage of the soul over the bridge of Chinvat (see Bridge). The fire-priests are paid to pray for the dead, monthly, for a year, and thereafter on the anniversary of the demise.

Addar jasan is the 9th day of the 9th month of the Parsee year. On this day, money is distributed to the priests, and offerings of sandal-wood are made to the sacred flame in their fire-temples, which are

then much crowded. The educated amongst them are inclined to imagine their Gurasman or Bahasht, in which Hormazd dwells, a heaven something like that of the Christians, but seven (or four) heavens are recognised amongst them; and their Dozakh, where dwells Ahriman or Shaitan amongst dark fiends, is the equivalent of hell.

In childhood, a Jubhla or silken frock is worn by the Parsees, both boys and girls, and they are invested with the Sadaro, or sacred shirt, and the cord or kusti, at the age of six years and three months. It is in reality deemed to be the seventh year,—the nine months of the child's gestation being included. This investiture is the initiation of the child into the religion of Zoroaster, the silken Jubhla being then discontinued. The Sadaro is made of cotton cloth, or gauze, or net, while the kusti is a thin woollen cord of seventy-two threads, representing the seventy-two Haas or chapters of the Izashne, one of their sacred books. The Sadaro and kusti are worn alike by men and women, but the latter likewise dress in the saree, generally of coloured silk, and the short-sleeved silk vest called the Kanchri or Choli. Provided the Sadaro be worn, any other material and of any colour may be added over it. It is to the kusti, the sacred thread, to which Moore, in his Lalla Rookh, alludes, when he makes Hafiz declare himself a fire-worshipper:—

'Hold! hold! thy words are death,
The stranger cried, as wide he flung
His mantle back, and showed, beneath,
The Gebr belt that round him hung.'

The kusti is terminated by two small tails at each end, denoting the four seasons; three knots on each tail represent in the aggregate the twelve months of the year. Baron de Bode, however, states that the cord is twisted, of 27 threads, such being the number, according to one Parsee interpretation, of the known kingdoms of the world at the time of Hushang. But it is variously explained. The assumption of the Sadaro or sacred shirt is part of the ceremony of initiation. It corresponds to the under garment worn by a Hebrew child, called Arbang Kanphoth.

In 1861, at the 11th meeting of the Bombay Literary and Philosophical Society, Professor Daddabhai Naoroji gave a short sketch of the present condition of the priesthood, whom he described as a body not only ignorant of the duties and objects of their own profession, but entirely uneducated. They only know how to read and write, as that is necessary to the preparation by rote of a number of recitations and prayers required for their daily avocations. On account of this general ignorance among the priests, there is no pulpit among the Parsees. The religious education of the Parsee child consists only in the preparation by rote of a certain number of prayers in Zend, without understanding a word of it. Of late some effort has been made to supply this want. A dialogue is composed, which gives a general outline of the doctrines and morality of the Zertusht religion, as believed by the present Parsees. The creed taught in it is summed up as follows:—To know God as one; to know the prophet, the exalted Zertusht, as his true prophet; to believe the religion of the Avasta, brought by him from God, as true beyond all manner of doubt; to believe in the goodness

of God; not to disobey any of the commands of the Mazdashna religion; to shun evil and wickedness; to strive for good deeds; to pray five times in the day; to believe in the reckoning and justice on the fourth morning after death; to hope for heaven and to fear hell; to consider the day of general resurrection and judgment as certain; to remember always that God has done what he willed, and shall do what he wills; to turn the face to some luminous object while worshipping God. God is the creator of all things. Deeds shall determine reward or punishment after death, and none but God alone will and can save.

They have sacred fires in the temples, towards which they turn when addressing their prayers, not to it, but to the God of which it is the symbol. The injunction is to turn their face to anything that is glorious, as the sea, the sun, etc. They would not abuse fire, nor extinguish it unnecessarily, nor use it in a contemptuous manner. Hence the Parsees do not smoke. Gaomaezo or nirang is the urine of the cow, ox, or she-goat; and the second act of a Parsee, after rising from his bed, and before touching anything with his hands, is to rub it over the face and hands, after which he purifies himself by having water poured on his hands and feet. This process is laid down and enjoined as a purification rite in the 9th Fargard of the Vendidad (page 120, line 21, in Berghaus edition). The reforming Parsees object to its use. Others say that Max Müller has misinterpreted this sentence.

A pious Parsee has to pray about sixteen times a day. They pray in the Zend language, which none of them understand. They pray on getting out of bed, after using the nirang, after bathing, after cleaning the teeth, after finishing the morning ablutions, after the ordinary natural functions, after washing the hands. Every one of the three meals begins and ends with prayer, besides the grace, and before going to bed the day is closed with prayer. Amongst the Parsees there is no pulpit, or pulpit orations in the vernacular of the people. Ordinarily every one goes to the fire-temple whenever he likes, recites his prayers himself, and as long as he likes; gives, if so inclined, something to the priests to pray for him. On several occasions, as in the occurrence of the Ghubar, the biannual holidays, there are assemblages in the temple, and prayers are then repeated, in which few or none join. The priests are described as very bigoted, and exercise much injurious influence, especially over the women. Perhaps only a dozen of professional priests lay claim to a knowledge of the Zendavesta, to the extent of reading with meaning the books they have been taught. Parsees have one wife. They do not eat beef, pork, or ham, and do not eat food cooked by a person of another religion. The high priest is called Dastoor; the other priests are styled Mobed, and the priesthood is hereditary. The Yazna, Vispard, and Vendidad are their sacred writings, but they have not been translated into a vernacular, and each Parsee has to pick up his religion as best he may.

Their ablutions for purification are much insisted on, after most of the natural functions, and, like the Hindu, the women dwell apart when unwell, and, similarly, for the forty days after childbirth, as followed by the Mosaic and Muhammadan

ritual. The people are of a yellowish-white colour, tall, large-made men, with long arms and large feet. Their women are of a pale white, but mostly with a slightly xanthous hue. A new code of laws for the Indian Parsees was promulgated in the middle of the 19th century. In social life, they now can marry only one wife, though formerly, in case of barrenness, a second could be married. The young bride is taken to her husband's house after she grows up. The women of the Parsee community are believed to be very chaste. They marry in comparative childhood, and this seems to have its usual resulting evils, for the immoralities of the men are frequently before the community in the public papers. The wife and husband call each other by their names. The Parsees do not eat the flesh of the cow or hog, and are permitted the use of spirituous liquors. Their women also use the latter; but they are a sober people, rarely partaking to excess. At their meals, when sitting down, they pronounce the grace, called Jamwani baz, which they suppose to be a thanks-offering.

Priestcraft, acting upon ignorance, has not failed to do its work, and has left a legacy of a few works for which the Parsee has no reason to be thankful. Many ceremonies have been thus introduced, but the reformers contend that all those ceremonies that have no authority in the original Zendavesta ought to be abolished. Of course the old and the priests do not like this at all. Marriage among cousins is recommended. The form of marriage among the Parsees is a very simple ceremony,—little more, indeed, than a civil contract, ratified by family consent and abundant festivity.

The ancient Persians reckoned a new era from the accession of each successive monarch, and as Yezdejird had no successor, the date of his accession to the throne, 16th June A.D. 632, has been brought down to the present time, thus making the year A.D. 1867 their year 1235-36. In their calculations, only 366 days are allowed to the year; leap year is unknown to them, though it is alleged that in every 120 years one month was added to make it correspond with the solar year. The year is divided into twelve months of thirty days each, and five days, or Gatha, as they are called, are added at the end to make up the deficiency. The months are,—

1. Farvardin.	4. Tir.	7. Meher.	10. Del.
2. Ardibehest.	5. Amardad.	8. Aban.	11. Bahman.
3. Khurdad.	6. Sharivar.	9. Adar.	12. Asfandiyar.

Gatha, 5 days.

The Parsees do not now divide their time into weeks, but name the 30 days of their months each after a celestial being—7 Amsshahpand, and 23 Izad—supposed to preside over them. These are as follow :—

Gujerati.	Pahlavi.
1. Hormazd.	Anuhma.
2. Bahman.	Vahuman.
3. Ardibehest.	Antavabisht.
4. Sharivar.	Shatnavin.
5. Spandarmad.	Sapandarmad.
6. Khurdad.	Khundad.
7. Amardad.	Amardad.
8. Dep-Adar.	Dini pavan Atun.
9. Adar.	Atun.
10. Awan or Aban.	Avan.
11. Khurshid.	Khur.
12. Mohar of Mah.	Maha.

PARSEE.

<i>Gujerati.</i>	<i>Pahlavi.</i>
13. Tir,	Tir or Tistar.
14. Gosh,	Gosh.
15. Dep-meher,	Dini pavan Matun.
16. Meher,	Matun.
17. Seroah,	Sarush.
18. Rashne,	Rashan.
19. Farvardin,	Farvardin.
20. Behram,	Varahram.
21. Ram,	Ram.
22. Guvad or Bad,	Wad or Vat.
23. Dep Din,	Dini pavan Din.
24. Din,	Din.
25. Ashashang,	Ard.
26. Ashtad,	Ashtad.
27. Asman,	Asman.
28. Zamiad,	Zamiad.
29. Maharaspand,	Mansar-spand.
30. Aniran,	Aniran.

The 1st, 8th, 15th, and 22d days are sacred to Hormazd, and thus afford evidence of an older division into weeks.

The Parsees of India are divided into two sects, —the Shahanshahi or Rasami, and the Kadimi or Churigar, the former of whom constitute the larger portion of the race. This division originated about the beginning of the 18th century, when a Persian priest named Jamasp arrived in India, and found that his co-religionists differed from their brethren of Iran in their calculation of time by a full month, and in other minor points relating to their liturgy. Serious disputes arose in consequence, which ended in the formation of the two sects, the Rasami adhering to their own views, and the Kadimi adopting the opinions imported by Jamasp, and thus agreeing with their Persian brethren. The difference lies in their computation of time, and in some slight variations in the forms of prayer. Those that begin their year a month earlier are styled Kadimi, and the rest Rasami, i.e. customary, and Shaharhai, for which some one proposed to substitute Shahanshahi ('of the kings of kings'), and this absurd change has ever since been adopted. The Kadimi Parsee era of Yezdejird, or Dareai Naoroz, or seareckoning, is made use of in nautical calculations among Asiatic mariners; and the new year always commences on the 1st of Farvardin, which falls about the 25th of August, one month earlier than the commencement of the Rasami new year. With the Rasami Parsees the new year begins on the 1st day of Farvardin, which in A.D. 1867 fell about the 24th of September, a month later than the commencement of the Kadimi new year.

About A.D. 1705, Jalaludin Malikshah, finding that the commencement of this year in Persia had anticipated the epoch by 112 days, ordered that in future the Persian year should receive an additional day whenever it should be necessary to postpone the commencement of the following year, in order that it might occur on the day of the sun's passing the same point of the ecliptic. U'mar Khyam, one of the astronomers appointed by him to construct a calendar, is said to have discovered that 8 intercalations in 33 years very nearly adjusts the calendar, giving the length of the year 365d. 5h. 49m. 5-65s. Scaliger and others say this was the period actually adopted, though Delambre shows that the Persian intercalation combines the two periods of 29 years with 7 intercalations, and of 33 years with 8 intercalations.

The Persian word Gab'r, applied to the Parsees, means any non-Muhammadan. According to the dictionary Burhan-i-Katten, Gab'r is used

PARSLEY.

in the sense of Magh, which signifies a fire-worshipper. Gab'r mani-i-Magh bashad, keh atash purust ast. This is sometimes written, and very often pronounced, Gavr, by a change of letters frequent in Persian, as in other languages. Gavr, we learn from the dictionary Jehangiri, means those fire-worshippers who observe the religion of Zertuast (or Zoroaster), and they are also called Magh. But Origen, in the 3d century, defending Christianity against Celsus, an Epicurean, who had alluded to the mysteries of Mithra, uses Kabir as equivalent to Persians. 'Let Celsus know,' says he, 'that our prophets have not borrowed anything from the Persians or Kabirs' (Orig. contr. Cels. lib. vi. p. 291, Cantab 1658). A Jewish writer, quoted by Hyde (Hist. Relig. Vet. Pers. cap. xxix.), declares that the Persians call their priests (in the plural) Chaberin (or Khaberin), whilst the singular Chaber or Khaber (occurring in the Talmud) is explained by Hebrew commentators as signifying Parsai, or Persians. On this subject Hadrian Reland has offered some remarks in Dissert. ix. de Persicis Talmudicis (see his Dissert. Miscell. part ii. p. 297, Traj. ad Rhen. 1706). Dr. Hyde, however, as above cited, thinks that Chaber or Chaver denoted both a priest and a layman. Meninski says, 'Ignicola, magus infidelis, quivis paganus.' The word is familiar to the people of Europe under the aspect of Guebre. It is a term applied by the Persians to the Persian-speaking part of the Teimeni tribe of the Char Aimak.—*Stuart's Jour. Residence in N. Persia*, p. 171; *Elliott's Gloss.*; *Ouseley's Tr. i.* pp. 150, 217; *Postans' W. India*, i. pp. 110, 120; *Muller, Chips*, p. 180; *Professor Daddabhai Naoroji and Dr. Ihne, in Proc. Bombay Lit. Soc.*; *The Parsees*, pp. 61, 70; *Wilson's Glossary*; *Menant on the Parsees*; *Bombay Almanac*; *De Bode's Travels*.

PARSHNI, a name of Kunti.

PARSIVAN, literally speakers of Persian. Parsivan (Parsi zabān) is a term applied variously to the settled inhabitants of towns engaged in commerce, and to the agricultural population engaged in tillage. The Parsivans, Col. MacGregor says (ii. p. 64), who are attached to the soil, obtain from the labour of cultivating it only sufficient for their families. For security, they must place themselves under the care of an Afghan. Parsivan and Aimak, who are subject to the Afghan, profess Muhammadanism. The Parsivan live in towns, and the Aimak are nomades, and live in tents. Their number is double that of the Afghans. The Tajak are subdivided into two very distinct classes,—the Parsivan or Parsi-zaban, who speak the Persian language, and inhabit towns and villages, and the wandering Aimak, who live under canvas. The Hazara are Aimak, though they pretend to be of Afghan race; the Afghans deny this, because they speak corrupt Persian, whereas the Aimak always speaks his mother tongue, the Pushtu.—*Ferrier, Journ.* p. 158; *MacGreg.* ii. p. 64.

PARSLEY.

Hu-tsai,	OHIN.	Petersillie,	GER.
Hiang-tsai,		Petrocinolo,	IT.
Persil,	FR.	Peroxil,	SP.

Parsley, Apium petroselinum, a seasoning herb, used in soups, garnishing, etc. It grows well in India during the cold months; requires a free, rich soil. Is cultivated from seed sown in beds or

PARSNIP.

rows, where it is to remain. The plants, when about two or three inches high, should be thinned, and a space of at least a foot left between each. It will, if watered and taken care of, continue all the year round. Occasionally cut down the leaves to within four inches of the root, as it makes the parsley throw out young and fresh leaves. It bears transplanting well. Give the preference to European seed; the common parsnip of the country is very insipid. The roots of parsley are much used in French cookery.—*Jaffrey*.

PARSNIP.

Pastinak, . . . DAN., DUTCH.	Oenoura branca, . . . PORT.
Pannais, FR.	Pasternak, RUS.
Pastinake, GERM.	Chirivia, SP.
Pastinaca, LAT., IT.	Palsternaoka, SW.

Parsnip, Hu-lo-p'u, CHIN., in India, is a vegetable very difficult to rear, as the seeds do not often come up. The parsnip belongs to the natural order Umbelliferae, and is closely related to the carrot, celery, and parsley. It is a native of Europe, and is most plentiful on dry banks or on a chalky soil. Pliny tells us that parsnips were cultivated on the banks of the Rhine, and were brought from thence to supply the tables of the Roman emperors. The wild parsnip, if grown for two or three years in rich garden soil, acquires all the characters of the cultivated form; and if the garden plant escape into uncultivated ground, it speedily reverts to its originally wild and degenerate condition. It is consumed in large quantities in Catholic countries, being used with the salt fish eaten during Lent.

PARSONS, ABRAHAM, author of *A Voyage from Bombay to Mokha and Suez*, London 1808.

PARSWA, the 23d Tirthankara, appeared about two centuries B.C. His symbol is the serpent.—*Tod*.

PARTABGARH, a town in Oudh which gives its name to a district, situated between lat. 25° 34' and 26° 10' 30" N., and long. 81° 22' and 82° 29' 45" E. In Manikpur and Bihar parganas, there are many families of Brahmans, whose ancestors belonged to the lower castes of Hindus, and were invested with the sacred thread by Raja Manik Chand, a brother of Jye-chand, the last Hindu king of Canouj. Of the lower castes, Kurmis (95,258), Ahir (92,622), Chamars (81,419), and Pasi (46,116) predominate, with a good sprinkling of Murao (26,263) and Gareria (25,232). The Kurmi and Murao are the best cultivating castes, and are almost all agriculturists. The majority of the Ahir, Chamar, Pasi, and Gareria are also cultivators. There are more Lohar (14,828) and Lonias (14,359) in Partabgarh than in any other district in Oudh; but comparatively few of the former are engaged in agricultural pursuits. The latter, salt-makers by hereditary profession, are almost exclusively cultivators. The lower classes, who for the most part pursue some distinctive trade, include the Julaha or weaver (9053), the Dhumia or cotton-corder, the Darzi or tailor and tent-maker, the Manihar or lac-bangle maker, and the Kunjra or fruiterer.—*Imp. Gaz.* vii.

PARTHASARADI, more properly Partasarati, meaning a charioteer; a name applied to Krishna, because he acted as the charioteer of Arjuna at the great battle of the Mahabharata, between the Kaurava and Pandava princes. It is the name of a deity at the temple in Triplicane, Madras, which the Vaishnava people largely reverence.

PARTHENOPE HORRIDA. *Edw.* A crab of

PARTHIA.

Madagascar, Bourbon, and Mauritius, covered with long sharp rugosities. See Crustacea.

PARTHIA, the country of an ancient dominant race of Scythians, known to the Romans by this name. Under the form Parthava, also Parsa, they are mentioned in the time of the Achæmenidæ. For centuries they maintained the independence in the east against the Romans. The rulers were as under:—

B. C.	A. D.
255 Arsaces I.	(Tiridates) III.
253 Tiridates I.	(Cinnamus.)
216 Artabanus I.	(Artabanus) III.
196 Priapatus.	42 Bardanes.
181 Phraortes I.	45 Gotarzes.
173 Mithridates I.	50 (Meherdates.)
136 Phraortes II.	51 Vonones II.
126 Artabanus II.	51 Vologeses I.
123 Mithridates II.	62 (Arsabanus) IV.
87 Mnaskires.	77 Pacorus.
77 Sinatroces.	108 Chosroes.
70 Phraortes III.	115 (Parthamaspatas).
60 Mithridates III.	116 Chosroes.
54 Orodes I.	121 Vologeses II.
37 Phraortes IV.	148 Vologeses III.
(Tiridates) II.	192 (Vologeses) IV.
(Phraortes) IV.	209 (Vologeses) v.
A. D.	Artabanus v.
4 Phraortes.	235 Artaxerxes, king of
5 Orodes II.	Persia, 1st of the
5 Vonones I.	Sassanidæ.
13 Artabanus III.	

Parthia proper was a small province, very near to the S.E. extreme of the Caspian Sea, which territory, after the division of Alexander's empire, fell to the share of the Seleucidæ, kings of Syria and of the east, about 300 years before the Christian era. About 50 years after, 250 B.C., under Arsaces, who is variously described as a native of Soghd, as a Bactrian, and by Moses of Chorene as of Balkh, this last author adding that the dynasty was known as Balkhavenses or Pahlavian, Parthia rebelled, and, together with Hyrcania and other adjoining provinces, became an independent state. Arsaces, however, used Greek only on his coins and in his public letters and correspondence. His coinage is ordinarily with the head of the sovereign on one side, and only one coin has a lingual inscription. As the empire of the Seleucidæ grew weaker, the Parthians extended their country westward; and the fine province of Media (now Irak-i-Ajam) fell to them; and within a century after the foundation of their state, it had swallowed up all the countries from the Indus to the Euphrates, Bactria included, and this province had (256 or 252 B.C.) thrown off the yoke of the Seleucidæ, long before Parthia. The Parthian conquests in Armenia, 70 years before Christ, brought them acquainted with the Romans, whose conquests met theirs, both in that country and in Syria. The Parthians, together with their conquests, had advanced their capital westwards, and had established it on the Tigris at Seleucia, or rather Ctesiphon (near the present Baghdad) before their wars with the Romans commenced. Their first wars with the Roman people continued about 65 years, and were noted by the expeditions of Pompey and Anthony, and the defeat of Crassus, B.C. 53, who fell on the plain of Carrhæ, the Haran of the Bible. On this event, the Parthians extended their conquests farther westward, but were afterwards compelled to retire; and they generally lost ground in Armenia and Mesopotamia during the time of the Roman emperors Trajan and Septimus Severus,

who recovered the line of the Euphrates under Trajan, and that of the Tigris under Septimus Severus, whose capture of the capital Ctesiphon gave a fatal blow to the Parthian power (A.D. 198). Trajan penetrated to their capital, and satisfied his curiosity by embarking on the inland sea. The moderation of Adrian restored the ancient boundary of the Euphrates. In A.D. 245, Persia, or Persia proper, which had for some ages ranked as a province of Parthia, gained the ascendancy. After they had reigned for nearly 500 years, the Parthian monarchy was overthrown by a native Persian named Ardesbir or Artaxerxes, surnamed Babekan, from his father Babek (A.D. 226).—*Quarterly Review*, 1873; *Prinsep's Antiquities by Thomas*, ii. p. 176; *Weber; Rennell's Memoir*, p. 200; *Malcolm's Pers.* i. p. 88; *Tod's Raj.* ii. p. 5.

PARTRIDGE.

Hajal,	ARAB.	Teetr,	HIND.
Perdix,	FR. SP.	Pernice,	IT.
Rebhuhn,	GER.	Keklik,	TURK.

Partridges belong to the Tetraonidae and sub-family Perdicinae, and the chief species in the East Indies are as under:—

- Lerwa nivicola*, *Hodgs.*, snow partridge, Himalaya.
Francoelinus vulgaris, *Stephens*, black partridge, North India.
F. pictus, *Jerdon, Selby*, painted partridge, Central and Southern India.
F. Phayreii, *Blyth*, North Burma.
F. pintadens, —? —?
Caccabis chukor, *Gray*, chukor partridge, Western Himalaya.
C. Græca, —? Western Asia, South Europe, North Africa.
Ammodendix bonhami, *Gray*, seeee partridge, Panjab.
A. Hayi, *Gould*, Arabia, Palestine, Western Asia.
Ortygonia Ponticæria, *Gmelin*, grey partridge, South India.
O. gularis, *Temm.*, kyah partridge, Bengal.
Ithizothera longirostris, *Temm.*, Malayana.
Arboricola torquella, *Vigors*, black-throated hill partridge, Himalaya.
A. rufogularis, *Blyth*, rufous-throated hill partridge.
A. atrigularis, *Blyth*, Tiperah, Chittagong.
A. intermedia, *Blyth*, Arakan.
A. brunneopectus, —? *Tickell*, Tenasserim.
A. sphenura, —? China.
Perdix personata, *Horsf.*, Java.
P. Javanica, *Gmelin*, Java.
P. Hodgsoniae, *Gould*, —?
P. punctulata, *Gray*.
P. Charltoni, —?
P. chloropus, *Blyth*.
Rollulus coronatus, —? Malacca crowned partridge.
R. niger, —?

There are three kinds of partridges in the plains of India, called by Indian sportsmen, black, painted, and grey; also rock or sand-grey, or bush and wood partridges. The grey, the least handsome, and far inferior to the English bird, the most nearly approaches it in appearance. The black excels all for the splendour of its plumage. The call of the black and painted partridge is very similar. In the Bombay Presidency the black partridge has not been seen south of Cutch. It is abundant north of it, in Sind, but would appear to be replaced by the painted, farther south. The flesh of all the partridges in India is white, and far inferior to that of either the common English or red-legged bird. The hen of the black partridge is quite different in appearance to the male, is not unlike the painted partridge of both sexes, and is sometimes mistaken for it. The black partridge commences to pair about April in the Himalaya, but earlier in the plains; the young remain with their parents a long time, and are

not fit for shooting until the middle or end of October. During the period of incubation the males can be heard answering each other; the call-note is harsh, and composed of four distinct sounds following each other in succession, and not unlike the words, 'Whee wha which a which,' which it repeats at short intervals when perched on a stone in bushy places. The Tibet partridge (*P. Hodgsoniae*) was first discovered by Mr. Wilson of Mussoori in 1841, and subsequently described by Mr. Hodgson. It was (1854) met with by Lieutenant Smith, 15th Regiment, near the Pangong Lake in Little Tibet. This partridge seems to be common along the western slopes of the Tibetan Himalaya, and affects barren mountain sides.—*Jerdon; Adams*.

PARUPA. TAM. Soft. Parupu kiré, Chenopodium album. Parupu benda, *Abelmoscus ficulneus*. Parupu velaga, *Feronia elephantum*.

PARU-PARISSANA. This name first occurs in the tri-lingual tablets of Darius, where the mountain range of Gandara is termed Paru-Parissana. Paru merely means a mountain in Sanskrit. The country is not known by this name by its inhabitants, who only speak of it by the tribe dwelling in, or the chief who commands it. Ferrier includes in this name, all the mountain country enclosed by the circle formed by Herat, Maemana, Balkh, Bamian, Ghazni, Kalat, Ghilzi, Kandahar, Zimindawar, and Sahlin. It may be looked upon as a vast natural fortress, thrown on to the centre, and on the culminating point of the great Asiatic table-land. From whatever side, it must be approached by rugged and high mountains, and it is also intersected by others in various directions, particularly east and west. It is a country of incessant change, the Jamshidi, the Hazara, the Zeidnat, and the Taemuni being in constant movement.—*Ferrier's Journey*, p. 254.

PARUS, a genus of birds, the tit-mice of the sub-family Parinae, family Ampelidae, and order Insessores. See Birds.

PARVATA, also Parbatya, a hillman, a mountaineer of Nepal.—*Wils*.

PARVATI or Parvati Peak, lat. 31° 51' 5" N., long. 77° 42' E., in Kulu-Lahol, near the source of the Parbati, an affluent of the Beas, 20,515 feet, G. T. S. Presents a steep broad wall, as seen from Jako.—*Schl.; Herm*.

PARVATI, generally written Parbatti, a hill of considerable height, south of the city of Poona, on the summit of which is a temple in honour of Parvati, consort of Mahadeva. This temple is much resorted to, and when lighted up on great occasions, it shows well, and from its top is a fine view of the city and environs. On the annual Hindu ceremony of Dutchna, or alms-giving, mendicant Brahmins come from considerable distances. A gift on this day tells tenfold of an ordinary alms. Generous people on the road to and from this meritorious pilgrimage, make presents to some Brahmins. The whole month is indeed very fit for the benefits from hospitality and alms-giving, so that the travelling Brahmins are fed, etc., all the way to Poona and home; and it is said that forty thousand have been known to assemble on this occasion at Parbatti. Its chief temple was erected A.D. 1749, at a cost of Rs.10,00,000. It has images of Siva and other deities, one wholly of silver, and one of gold.—*Major Moor*, pp. 376, 377.

PARVATI.

PARVATI, in Hindu mythology, a goddess, fabled to be the daughter of Parvata, a mountain, and the sakti or consort of Siva. She has been amalgamated with many Vedic and Puranic and local goddesses. Her forms are more various and powers more extensive than those of any of the other Hindu deities; and she acts sometimes dependent on, at others wholly independent of, her husband. As a girl she was called Gauri. She is known as 'the mother,' Ambika, who at a later period is identified with the wife of Rudra. Uma, daughter of Himavat, or the Himalaya, is another form. Parvati, the mountain goddess, also the daughter of Himalaya, is a still later and now more common title. As Kali, the black goddess, and Durga, she is the most terrible deity of the Hindu pantheon, to be propitiated by human sacrifices, and invoked when the destruction of an enemy was sought. She is also called Bhawani, in which she corresponds with Lucina. As Kamachi, she is the goddess of love-inspiring eyes; and at Madura she is worshipped under the name of Minachi, fish-eyed. Muir supposes that as early as the time of Pliny she was worshipped at Cape Comorin, called after her, Kanyakumari.

Parvati is known in her martial character as Durga, or active virtue, and as such she destroyed the Asura, or demon Maheha, a personification of wickedness.

As Durga Mata, one of the characters of the Rajput, she is the 'Mother of the Mount,' and her shrine crowns many a pinnacle in Mewar; and, with the prolific Gauri, she is amongst the amiable forms of the universal mother, whose functions are more varied and extensive than her sisters of Egypt and of Greece. As Durga Mata, she is the Mater Montana of Greece and Rome, according to Diodorus, an epithet of Cybele or Vesta as the guardian goddess of children. She seems to be the same as the divinity of Hieropolis, called Rhea, and Cybele in Phrygia.

She is largely worshipped as Mera, and in Bengal as Durga.

Anna Purna Devi, a goddess of the Hindu mythology, is a beneficent form of Parvati. She is described as of a deep yellow colour, standing or sitting on the lotus, or water-lily. She has two arms, and in one hand holds a spoon, in the other a dish. In her dress she is decorated like the other modern images of Durga. Anna Purna is a household goddess, and is extensively worshipped by the Hindus. Her name implies the goddess who fills with food, and they believe that a sincere worshipper of her will never want rice. She is possibly the Anna of Babylon; and she has been considered as the prototype of the Anna Perenna of the Romans, whom Varro places in the same rank with Pallas and Ceres, and who was deified and held in high esteem by the Roman people, in consequence of having supplied them with food when they retired into Mount Aventine. Besides the great similarity of names, there is a singular coincidence in the times of their worship, the festivals of Anna Purna taking place in the early part of the increase of the moon, in the month Choitru (partly in March), and those of the Roman goddess on the Ides of March. In India, she is known simply as Anna, also as Anna Purna or Anna Devati. In a hymn addressed to her by the rishi Agastya, she is personified as Pitu, or material food. Anna Purna is from the Sanskrit,

PARWANIYA.

Anna, food, and Purna, full. Another name is Anna, food, and Prashana, feeding. The Rajput rite of Sati or self-sacrifice is traced to Parvati. Sati, to avenge an insult to Iswara, in her own father's omission to ask her lord to an entertainment, consumed herself in the presence of the assembled gods. With this act of fealty (Sati) the name of Daksha's daughter has been identified; and her regeneration and reunion to her husband, as the mountain nymph Mera, or Parvati, have by some been supposed to furnish the incentive to similar acts. In the history of the Hindu celestial Mera, the Rajputni has a memorable lesson before her, that no domestic differences can afford exemption from this proof of faith. Parvati, as the consort of Siva, has maternal claims upon Kartikeya, the leader of the celestial armies, and Ganesh or Ganapati, the god of wisdom. As Parvati she is described of a white, as Kali of a dark blue or black, and as the majestic and tremendous Durga, of a yellow colour.

Parvati by the Saiva sect is identified with the supreme sakti Mahadevi.

Parvati has no particular temples, but her statue has a sanctuary apart in the temples of Siva.

The argha or yoni in Hindu mythology is Parvati's especial emblem.

On one occasion, when Vishnu beheld Siva dancing about frantically with the deceased form of Sati in his arms, he cut it into fifty-one pieces; which Siva, who still continued in his frenzy, scattered in different parts of the earth. These spots he afterwards ordained to be places of worship to his own and his energy's peculiar emblems.

PARWAN or Parman. On the tops of the hills on the island of Bombay, resided in 1842 about 75 families of cultivators. The costume of the women, and many of the words in their language, are similar to the Hinduti. They said that they immigrated from Rajputana.

PARWAN DARA, a river and narrow valley of the Koh Daman of Kabul. From the head of the valley to the village of langheran, it is a narrow rocky defile, but afterwards assumes a softer character; and the Saralangi erect their castellated houses on the projecting boulders. Parwan is situated in a nook of the Hindu Kush, and has, from its position near the terminus of several of the chief passes, often been famous in Asiatic history. It is evidently the Karwan of Jaubert's Edrisi (a mistranscription for Farwan). The town of Parwan is of no great size, but a nice enough place, with agreeable environs, thronged bazars, and rich inhabitants. At Parwan the army of Chengiz was checked for the moment in 1221, being defeated by the Sultan Jalal-ud-Din of Khwarizm. In the valley near Parwan, in 1840, a brigade of Bengal troops under General Sale was attacked by remnants of Dost Muhammad's army, and a Bengal cavalry regiment fled, which caused the day to be lost, when two officers were wounded, and three officers killed.—*MacGregor*, pp. 620, 621.

PARWANIYA, in Benares, a numerous body of Hindus. Ten or twelve days after the birth of a son in the family of a Hindu, two members of this caste come to the house, where they sing songs of gratulation and joy, keeping time by the beating of a drum.—*Sherring's Tribes*.

PARWAR. PERS., HIND. A patron. Ghrib-parwar, a nourisher of the poor. See Parrapar.

PARWARI. MAHR. Properly, Parawari. In Maharashtra, the dwellers outside the walls. They are of non-Aryan races, whom Hindus consider to be unclean, and do not permit to reside within the walls. They are also called Ati Sudra, or inferior Sudra; also Autyaja, or last-born. Of the Parwari are the Mhar or Dher, who eat animals that have died of disease, make hide ropes, are the village boundary men, scavengers, police, guides. The Mhang is another of the Parwari. The Parwari of the Bombay army, along with the 2d Battalion of the 42d Highlanders, defended Mangalore for six months against a force of 40,000 men, and then capitulated honourably.

PARYSATIS, the Greek mode of writing the name of Pari-zad (fairy born), the mother of the young Cyrus.

PASA. HIND. A die; plural, Pasé. Those in use by the Hindus are oblong, and both skill and chance are brought into play. The most celebrated match occurred between Yudishtra, the eldest Pandava, and Dhritarashtra. Also, a square ingot of silver, weighing from 32 to 60 tolas. The word is current at Berhampur.—*Wh. H. of I.*

PASA LINIJA, a Penang wood of a light-brown colour. A large tree, used only for planks; it soon decays.—*Col. Frith.*

PASARI, Pasehi, Pasban, or Timni (*Zizania aquatica*), are different kinds of rice of spontaneous growth, found on the borders of lakes and swamps of N. India; the Timni is a larger and better grain than the other. They sell half as much more for a rupee than ordinary rice.

PASBAN, Gorayat, Paik, Douraha, etc., in Hindustan, are the village watchmen, whose places in the Dekhan are taken by the Mhar; in Gujerat, by the Paggi; in Telingana, by the Tillari.

PASH, Pys, or Pashu. HIND. A cord or rope, seen in the hands of some of the Hindu deities to strangle sinners with. Whoever is caught by it cannot get away.—*Myth. Hind.* 391.

PASH, also written Pakh, Push, and Pukh, in the district of Rudak and the highlands of Kashgar, in the Waziri country, the supposed original seat of the Afghan tribes, and of the origin of the words Pushtu and Pukhtu.

PASHA, also Pacha and Padsbah. PERS. A king, a noble.

PASHAI, a race mentioned repeatedly by Leech as one of the most numerous tribes in the Punjshir valley and adjoining passes. These are supposed to be Muhammadans; but as the name is mentioned also by Elphinstone as that of one of the Kafir tribes, part of them in the mountains may have retained their heathenism and independence.

PASHANA. SANSK. A stone, a rock; a term used in deeds of sale or grants of land to convey a right to all precious stones, minerals, or ores in the transferred land.

PASHIA, amber necklaces worn by the women of Tibet.

PASHM. HIND. Wool, shawl-wool; the fine wool which forms the material of the shawls generally in the Panjab. Pashm and pashmina are specially applied to the fine shawl-wool of Turfan and Changthan. It is produced abundantly

in the eastern provinces of Bod, as far as Lhasa. The people of U-chang, i.e. the provinces about Lhasa and Digharcha, wasted it in Lieutenant Strachey's time. The Rudakh pashm was combed out without shearing.

The woollen substances used in the Panjab are—

a. Pashm, or shawl-wool, properly so called, being a downy substance found next the skin and below the thick hair of the Tibetan goat. It is of three colours,—white, drab, and dark lavender (Tusha). The best kind is produced in the semi-Chinese provinces of Turfan Kiohar, and exported via Yarkand to Kashmir. All the finest shawls are made of this wool; but as the Maharaja of Kashmir keeps a strict monopoly of the article, the Panjab shawl-weavers cannot procure it, and have to be content with an inferior kind of pashm produced at Changthan, and exported via Leh to Amritsar, Narpur, Lodhiana, Jalalpur, and other shawl-weaving towns of the Panjab. The price of white pashm in Kashmir is—for uncleaned, 3s. to 4s. per lb.; ditto cleaned, 6s. to 7s. per lb.; of Tusha ditto, uncleaned, 2s. to 3s. per lb.; cleaned, from 5s. to 7s. per lb.

b. The fleece of the Dumba sheep of Kábul and Peshawur, sometimes called Kábuli pashm, is used in the manufacture of the finer sorts of choga, an outer robe or cloak with sleeves, worn by Afghans and other Muhammadans of the western frontier.

The pashm of the wild sheep and ibex is of a delicate grey colour, and finer and softer than that of the shawl goat.

Where the finest shawls are woven, every care is taken to procure the best pashm, and to clean it. The best kind is cleaned with lime and water; but ordinarily the wool is cleaned by being shaken up with flour. The next operation is that of picking the hair from the pashm. This is a tedious operation, but the value of the cloth subsequently manufactured varies with the amount of care bestowed upon it. The wool thus cleaned and sorted is spun into thread with the common charkha or native spinning machine. This is also an operation requiring great care; and white pashmina thread of the finest quality will sell at 25 rupees the pound weight. The thread is next dyed, and is then ready for the loom.

Pashmina fabrics, embroidered with silk, and plain pashmina cloths, are produced extensively at Amritsar and Lodhiana, and a few at Lahore.

PASHAPUR, an ancient town on the N.W. frontier of British India, mentioned in a Sanskrit play:

Rak. What news from Pashapur?

Vir. I have not much to tell, sir:

Where shall I commence?

Rak. With Chandragupta's entry in the city.

Whatever my agents since have done, inform me.

Vir. You will remember, sir, when in close league United by Chanakya, Parvataswara And Chandragupta in alliance, led Their force against the city,—a wild multitude Of Sakas, Yavanas, and mountaineers, The fierce Kambojas, with the tribes who dwell Beyond the western streams, and Persian hosts, Poured on us like a deluge.

PASHTUN, according to Vigne, is the name of the language of Afghanistan and of this people. It commences at Herat on the west, and is understood and spoken throughout Afghanistan, the Panjab frontier tribes, and Turkestan. See Pash.

PASI, the village watchman of Oudh, paid usually by a plot of land, or 2½ seers of grain from each bigha. The Pasi are also toddy drawers.

PASPALUM.

PASPALUM, a genus of the *Panicaceæ*, of which the species *P. distichon*, *Burmans*, *P. acrobiculatum*, *Linn.*, and *P. stoloniferum* are grown in the *E. Indies* as fodder and food plants.

PASPALUM STOLONIFERUM. *Linn.*

Kodo, *Myna*, . . . *HIND.* | *Aruga*, *Warugu*, . . . *TEL.*
This is an inferior grain, only used by the poorest classes. It is cultivated over almost all parts of India. It delights in a light, dry, loose soil, but will grow in a very barren one, or where the soil is barren and unsuited to the cultivation of better grains. Dr. Roxburgh distinguished from this the species which *Linnaeus* called *Paspalum kora*, but it appears to be only a variety growing in moist situations. Both species are much relished by cattle, either in a green or dry state. The *Kakum Rajputs* of *Ghazipur* never cultivate or eat *kodo*: '*Nefas violare et frangere morsu*;' and the reason assigned is that, while under the influence of *Mutouna*, they were set upon by some of the neighbouring tribes, and lost the greater part of their once extensive possessions. The variety of it called in *Tamil* *Serruku Warrugu*, and in *Telugu* *Tikka Arikehlu*, if not dressed in a particular manner, is said to produce vertigo, nausea, and other unpleasant symptoms. Dr. D. White, of *Bombay*, writes that this variety is called in *Gujerati*, *Menya*, which he supposes is taken from the *Sanskrit* word *Mana*, signifying causing frenzy. *Khesari* (*Lathyrus sativus*) is another grain which is found to have injurious properties.—*Eng. Cyc.*; *Elliot*; *Roxb.* i. p. 278; *Ainslie*, p. 220.

PASSAETA. *Guj.* Lands allotted for the support of district and village officers.

PASSAGE ISLAND, a name of *Barn Island* in the *Straits of Singapore*.

PASSALÆ. See *Topes*.

PASSALUS, a genus of *coleoptera*, which abounds over *India* and the *Archipelago*.

PASSERINA, *Kan-sui*, *CHINESE*, is a *Chinese* plant which has an acrid and poisonous juice; its tubercular or nodulose roots are sold with the tubers separated; they are given in *anasarca*, *ascites*, *tympanitis*, *hernia*, *hydrocele*, and *dysuria*, and are applied to ease pain, and to the ears in cases of deafness. *Passerina chamaedaphne*, *Yuen-hwa*, *CHINESE*. In *China* the small dried flowers of this plant are infused in a spirit much drunk in central *China* as a sort of cordial, tonic, and anti-febrile tincture. The leaves, flowers, and root-bark are applied to buboes as counter-irritants. They are said to act on the womb.—*Sm.*

PASSERINÆ, the sparrow sub-family of birds, of the family *Fringillidæ*, sub-family *Passerina*, as under:—*Passer montanus*, the tree sparrow of *Europe*, *Asia* (commoner to the eastward), *Siberia*, *Tibet*, *Sikkim*, *Arakan*, *Malayan Peninsula*, *Java*, *China*, *Japan*. *Passer salicarius* (vel *Hispaniolensis*) of *Barbary* and the southern parts of *Europe*, *Asia Minor*, *Bokhara*, and *Afghanistan*, visits the *Peshawur* valley and *Kohat* in large flocks, being everywhere more highly gregarious than *P. domesticus*, *P. petronia* (*Petronia stulta*), also of *S. Europe* and *N. Africa* to *Madeira*. It is common in *Afghanistan*. See *Sparrow*.

PASSES.

Ghat, *HIND.* | *To-gé*, *JAP.*

The following are the principal passes bound-

PASSES.

ing *British India*, and traversing many of the provinces and regions within the frontier:—

1. *Dekhan.*

	Feet.		Feet.
Bapdeo,	3499	Pochama,	2446
Katruj,	3019	Nana,	2429
Par,	2698	Jam,	2328
Nagcherri,	2645	Malsej,	2062
Navi,	2617	Tal,	1912
Salpi,	2478	Bhor,	1798

2. *Malwa.*

Pendera,	3498	Poppora,	1560
Silva,	1928	Gumba,	1563
Mandla,	1626	Singampur,	1437

3. *Karnatic, Neilgherries, and Ceylon.*

Sigur,	7204	Kodur,	2401
Sispara,	6742	Gantvarpilli,	2373
Rangbode,	6589	Kianagherri,	2150

4. *In the crest of the Himalaya, from Sikkim to Kishtwar.*

Ibi Gamin,	20,459	Sipu,	17,670
Janti,	18,529	Uta Dhura,	17,620
Parang,	18,500	Birmkanta,	17,615
Donkia,	18,488	Kiungar,	17,331
Mana,	18,406	Niti,	16,814
Kiobrang,	18,313	Vallanchun,	16,756
Nelong,	18,312	Puling,	16,720
Umaai,	18,123	Shinku La,	16,684
Langpia,	17,750	Bara Lacha,	16,186
Mayang,	17,700		

5. *In the crest of the Kara-korum, from long. 76° to 79° 30' E. Gr.*

Mustagh,	19,019	Kara-korum,	18,345
Chang-chen-mo,	18,800		

6. *In the crest of the Kouen Lun, from long. 78° to 80° E. Gr.*

Elchi,	17,379	Yurungkaah,	16,620
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The comparison of these with the passes in the Alps and in the Andes will be of interest.

In the Andes.

Alto de Toledo,	15,590	Asauy,	15,526
Lagunillas,	15,590		

In the Alps.

New Weisssthor (a),	12,136	St. Theodule,	11,001
Old Weisssthor (a),	11,871		

(a) These two passes cannot be used for practical purposes.

In the southern part of the *Peninsula of India* is the valley and gap or pass of *Palghat*, leading to the western coast. The *Guzzelbuttery pass* leads up the deep valley separating the *Neilgherry Hills* from *Colligal*.

The *Mana* and the *Niti* passes are on the *Saraswati* and the *Dooli* branches of the *Ganges*.

Juwahir Darma or *Belong* and *Byans* are passes on the *Gouri*, *Dhoul*, and *Kali* rivers, branches of the *Gogra*. The *Rotang pass*, in the *Himalaya*, in lat. 32° 24' N., and long. 77° 10' E., is 13,200 feet above the sea. The *Rotang pass* near *Dharmasala* leads to the heart of *Central Asia*. The *Beas* river rises in a sacred pool called '*Vyas Rikhi*' in the *Rotang pass*, at the head of the *Kulu* valley. The scenery of the river valley is very beautiful, and is unlike that of the *Chenab* or *Sutlej*. The river is fringed with trees, and studded with green islands. There is a good riding path close along the bank, which does not exist upon any other river in the *Panjab*. Besides *deodar* in the *Upper Beas* valley, '*kail*,' *Pinus excelsa*, *elm*, *maple*, *oak*, and *walnut* are

PASSES.

abundant. On the Parbati, box occurs; also olive and the twisted cypress (*C. torulosa*) are found in small quantity.

Kanawar is usually divided into Upper and Lower Kanawar, and includes the upper part of the Suttlej basin to the borders of Piti and Guge in Tibet. Its general direction is N.E. and S.W. It has two parallel bounding mountains. On the S.E. it is bounded by the Cis-Suttlej mountains, and to the N.W. by the mountains of Piti. The mountains which descend from the two parallel bounding chains of Kanawar are very lofty. They are crossed in the usual route into Tibet by the Werang pass, 13,200 feet; by the Runang pass, 14,500 feet; the Kuibrang in the north, across the Cis-Suttlej, is 18,300 feet. The Shatul pass across the Cis-Suttlej leading to Simla is 15,560 feet; and the Hangrang into Piti is 14,800 feet. The passes to Upper Piti are more lofty. The bed of the Suttlej, from 8000 to 9000 feet at the upper part of Kanawar, descends to 4000 feet in Lower Kanawar.

The passes from Kanawar through the Outer Himalaya range are fifteen in number:—

- (a) Shatul, 15,555 feet, leading from Rol to Utharabi. This pass is reckoned worse than most of the others, not on account of its elevation, for it is inferior in altitude to many of the rest farther to the east, but from there being almost 14 miles without even a single bush for fuel. It is open part of June, July, August, September, October, and sometimes November.
- (b) Sundru, from Tangno to Rasgrami. The people represent it as crossing two ranges, and say it was very seldom attempted, and was never open more than two months in the year; so it is probably little below 16,000 feet.
- (c) Yusu, 15,877 feet, leading from Janglig to Rasgrami.
- (d) Burendo, 15,171 feet, is the easiest pass in this quarter, and most frequented; it leads from Janglig to Rasgrami, and is open seven or eight months, and during the rainy season almost all the snow dissolves.
- (e) Nibrung, 16,035 feet; (f) Gunas, 16,026 feet; (g) Ghusul, 15,851 feet; from Chuara to Sungla of Tukpa. These three passes cross the top of the range within half a mile of each other.
- (h) The next is Rupin, 15,480 feet, a very easy pass.
- (i) Nulgun, 14,891 feet, is the lowest pass seen by Gerard, in the outer Snowy Range.
- (j) Barga; (k) Lumbia; (l) Marja; (m) Singa. These four passes are contained in the space of little more than a mile; they lead from Sungla, Rakcham, and Chetkul, to Lewar of Garhwal, and, like Gunas, Nibrung, and Ghusul, are crossed in different months. Barga is reckoned lowest, so is probably little above 15,000 feet; it is chiefly travelled by the Sungla people, being on the direct road from that place. The others are most likely between 16,000 and 17,000 feet, and are frequented by the inhabitants of Rakcham and Chetkul.
- (n) Sungla, from Chetkul to Burasu of Garhwal, is reckoned lower than Kimlia, and may perhaps be 16,000 feet. The road is said to be generally bad, and is travelled for six months.

There are three passes to the westward of Shatul, the Jalsu, Khealig, and Sungri, but they cannot be considered in the Himalaya, being from 2000 to 4000 feet below the circle of congelation. These fifteen passes are almost as good as the Rampur road, and many of them considerably better. Most of the passes to the eastward are said to be better than those mentioned; some of them are—

- (o) Shear Garh, a difficult pass.
- (p) Burasu, to Chungsa; much snow, and rather difficult.

PASSES.

- (q) Jannubi, to Chubrung; high, but very easy.
- (r) Kedarnath, said to be very difficult.
- (s) Dumnia, from Badrinath to Chubrung; the pass is high, there is much snow, but the road is good, and is travelled by loaded cattle.
- (t) Birji pass; (u) Niti pass; (v) Dharma pass; (w) Juar pass. These last four passes are travelled by cattle.

The passes leading from Kanawar to Chinese Tartary on the eastward are six in number, all of which are practicable for loaded sheep:—

1. Chungsakhago, from Chetka to Neilung, on the Janki or Jannubi branch of the Ganges; a lofty pass, probably not under 18,000 feet.
2. Kuno pass, from Kuno to Tunge;
3. Tidung, from Charung to Tunge. These two roads are each about five days' journey without an intermediate village, and, like Chungsakhago, cross a high, flat piece of ground.
4. Kiubrang, from Nisung to Bekhur, five stages without a village. The road leads up the Taglakhar river for three and a half days, and is often difficult.
5. Gangtung, from Dabbling to Bekhur. This, properly speaking, is not a distinct road.
6. From Nungea to Shipke there are two roads—1st, Piming, the height of which is only 13,661 feet. Part of this path is very rugged, in clearing the deep-worn glen of the Upsung rivulet.

There are four passes leading to Spiti—

1. From Pandrabis,
2. Tari from Wangpo, } Open five months.
3. From Lipe.
4. Manerung, from Sungnam, open three and a half or four months.

The Kanawari and Tartar races estimate the altitudes of the passes by the difficulty of breathing they experience in ascending them. Those who cross the outer chain attribute the symptoms from which they suffer, to the noxious qualities of a poisonous plant; but the best informed, who are in the habit of traversing heights where there is no vegetation, know well that they are produced by the height alone.

In the Kouen Lun, all passes above 15,000 feet are closed in winter by the heavy snowfall.

Chang-chen-mo gives its name to a route of about 16 marches between Ladakh and Eastern Turkestan, said to be the easiest from India to Upper Asia, much easier than the more westerly Kara-korum route traversed by Schlagentweit and Mr. Johnson. The heights vary from 19,000 to 21,000 feet, but the mountains are generally rounded, and fuel and grass are abundant save at one stage.

Gunah is equidistant between Ilchi and Yarkand, and the Kara-korum route meets this route at Shadula. The existence of glaciers in Western Tibet was first made known by Vigne, who alludes to them in his *Travels in Kashmir*. Colonel Richard Strachey was the first who proved their existence in 1847 in the Himalaya.

Dras adjoins Kashmir, the intercommunication being by the Zoji pass, a remarkable depression of 11,300 feet, through which flow the moist winds of Kashmir, and Dras is the most humid and fertile province of Tibet.

In December 1845, when the Chinese fought a battle near Tirthapuri in Gnari Khorsum, the garrison of Takla Khar fled across the pass near the head of the Kali river. Even in this unopposed flight one-half of the men were killed by frost, and many of the remainder lost their fingers and toes; the flight was most disastrous.

The snow-line in the Himalayan regions is 14,000 feet south of the range, and 16,000 feet

north of it. Roses grow in the valleys 13,000 feet above the sea; and in the Tibetan table-land corn is sown at an altitude of 16,500 feet, and in one place nearly 18,000 feet above the sea. There would appear to be three or four passes varying in height from 15,000 feet to 17,000 feet, which enter Tibet. In considering these great altitudes, we must bear in mind that the Kirong pass is available for a very extensive traffic. There would appear to be no doubt that the Jeylub pass, in Chumbi, is still more practicable. The Jeylub pass is the lowest in the Chola range, which, again, is one of the lowest sections of the Himalaya. It leads into the Tibetan territory of Chumbi, and from the pass to Lhassa is from 200 to 300 miles.

The Parijong pass, used by Bogle, Manning, and Turner, was in their day open certainly until November, when the cold was not at all extreme; and by the Donkia and other passes Sikkim has maintained for centuries some sort of communication with Tibet.

Mr. Georgia Bogle, who was sent in 1775 on an embassy to the Grand Lama of Tibet in 1774, travelled by way of Koch-Bahar, Tassasudon, and Paredrong to Chanmanning, the then residence of the Lama, and nearly in the same parallel of latitude with Lhassa.

Passes through Assam lead along the valley of the Dihong;—the northern bank of the Lohit through the Mishmi Hills, leads into Tibet; the Phan-gan pass leads to Man-chi in China, a month's journey over mountains 6000 to 18,000 feet high. The Patkoi pass to Bhama and China affords means of communication between the Singpho tribes on the north and south of the Patkoi mountains. This was the route followed by the Burmese in their invasion of Assam, which led to the first war between them and the British.

In the south of India the highest pass is the Sigur in the Neilgherries, 7204 feet. The Rang-bodde pass in Ceylon, 6589 feet, is little inferior in height. Of the numerous passes occurring in the Western Ghats, the Papdeo and the Katruj both exceed 3000 feet, the former being 3499 feet, the latter 3019 feet; and the Ramghat is upwards of 2000 feet.—*Trelawney Saunders' Mountains and River-basins.*

PASSEWA. HIND. A semi-fluid extract obtained from the capsules of the poppy after the seeds are extracted; it hardens by exposure, and is used in making up the shell-coverings of the opium cakes for export. It contains a portion of morphia.

PASSIFLOREÆ, the passion-flower tribe of plants, comprise about 14 genera and more than 200 species, of which 20 occur in the E. Indies. The name is derived from a fancied resemblance between the parts of their flower and the emblems of the Messiah's crucifixion. They are all twining plants, often scrambling over trees to a considerable length, and in many cases the large gaily or richly coloured flowers make them favourites in gardens, where many are cultivated, particularly *P. alata*, *P. quadrangularis*, *P. edulis*, *P. cærulea*, *P. racemosa*, *P. Loudoni*, *P. onychina*, *P. palmata*, and *P. filamentosa*. It is, however, chiefly for their fruit that they are valued in the countries where they grow wild, the pulp which envelopes the seeds being cool and refreshing, with something of a fragrant bouquet. The

granadilla, *P. quadrangularis*, fruit is as large as a child's head, and is grown in many parts of the E. Indies. The water-lemon of the W. Indies is the produce of *P. laurifolia*; *P. maliformis* bears what is called the sweet calabash; and the pleasant pulp of *P. edulis* furnishes the confectioner with a most delicate material for the flavouring of ices. Many, however, are of no value for their fruit, and some are actually fetid. There are several wild varieties,—*Modecca palmata*, Courtallum, Cochín; *M. dubia*, Sumatra; *M. trilobata*, Chittagong; *M. furfuracea*, Prome; *M. extensa*, Khasya. *Passiflora Chinensis*, Wall., a native of China. *P. foetida*, a species with fetid flowers, but very elegant moss-like involucre, may be often seen creeping over the hedges in Moulmein. *P. laurifolia*, the laurel-leaved passion-flower, called in the W. Indies water-lemon vine, appears to have been the first of the tribe introduced into Burma. *P. quadrangularis*, granadilla, flourishes well in Burma and on the Tenasserim coast, and is very prolific. The smooth, oblong fruit grows nearly as large as a cucumber, contains a succulent pulp, which makes a cooling, delicious dish, and, when prepared in tarts, can scarcely be distinguished from green apple. The Rev. Mr. Bennett of Tavoy introduced it among the Karens, by whom it is highly esteemed, and much sought for. It possesses all the attractive qualities of fine fruit, has handsome, fragrant blossoms, and, when trailed over an arbour, gives a rich passing shade. *Carica papaya*, one of this order, yields the valued papaw fruit.—*Riddell's Gardening; Eng. Cyc.; Mason; Jaffrey.*

PASTE, in jewellery, imitative gem.

PASTILLES.

Wan-yen-hiang, . . . CHIN. | Ood-batti, . . . HIND.

The Ood-batti pastilles in use in India, burned at Muhammadan tombs, are made of benzoin. The Wan-yen-hiang of the Chinese are long, limp torches of bamboo, covered with a composition of elm sawdust, some fragrant substance, and a small quantity of sulphur or orpiment. They are burned to drive away mosquitoes or overcome bad smells. They are sold in China for one cash each.—*Smith.*

PASTINACA, a genus of plants of the order Apiaceæ, from *Pastinum*, LAT., a two-pronged fork. *P. sativa*, Linn., has two varieties—(a) *Sylvestris*, the wild parsnip of Europe; and (b) *Edulis*, the cultivated parsnip. *P. Hookeriana*, *P. ringens*, *P. sprengeliana*, and *P. sativa* are grown in the E. Indies.—*Wight's Icon.* No. 1008.

Pastinaca sativa, L.

Hu-lo-pu, . . . CHIN. | Parsnip, . . . ENG.

Var. a. *Sylvestris* is the wild parsnip of Europe and the Caucasus.

Var. b. *Edulis* is the cultivated parsnip. It is extensively cultivated in Guernsey and Jersey as fodder for cattle. In the north of Ireland, parsnips are used in the composition of a kind of beer, brewed with hops. Wine and ardent spirits are likewise made from the roots.

Pastinaca seacal is the Shakakel misree (*Sium sisarum*, Ainslie), much used by eastern physicians; the root is a very efficacious medicine. Dr. Royle thought it came from Kashmir to Hindustan, but Honigberger heard that it is imported from Egypt; and hence, probably, it is called Egyptian (misree).—*Honigberger; Voigt; Eng. Cyc.*

PASTORAL TRIBES are in all Central and

Southern Asia, and there are many semi-nomades on the borders, and within the confines of British India, amongst the two last being all the frontier Afghans, Baluch, Brahui, and Jat; the desert tribes, Champs, Ahar, Ahir, Dhangar; and the Gadariya, Gujar, and Kurubar, Goala, Gop, Sadgop, Kum, Rangar, and Gurung. In Persia, Kurdistan, and Arabia, the chief part of the population are nomades. See Nomade.

PASTU, the language of the Afghans, also written Pashtu, Pushto. See Pash; Pashtun.

PASU-PATI. SANSK. Lord of animals, a name of Siva.

PASUT of Lahoul, a compound of alum, etc., used in dyeing.

PASWAJ. HIND. A woman's gown of a light texture and gay colour.

PAT. HIND. Part of the sugar-cane mill. A plank.

PAT is the wool of a goat of Kābul and Peshawur, inferior to the real pashmina or shawl-wool of Tibet, from which a texture called Pattu is made.—*Powell's Handbook*, p. 21.

PAT, a desert plain; a desert country between Anee and the hills west of the Indus, above Mithunkote. It is wandered over by the ghor-khar, the Equus onager.

PAT. HIND. A leaf of a plant, any leaf; a book.

PAT. The five pat in Northern Hindustan, were Panipat, Sonpat, Indrapat, Tilpat, and Baghpat, of which all but the last were situated on the right or western bank of the Jumna. The term Prastha, according to H. H. Wilson, means anything spread out or extended, and is commonly applied to any level piece of ground, including also table-land on the top of a hill. But its more literal or restricted meaning would appear to be that particular extent of land which would require a prastha of seed, that is, 48 double handfuls, or about 48 imperial pints, or two-thirds of a bushel. This was no doubt its original meaning, but in the lapse of time it must gradually have acquired the meaning, which it still has, of any good-sized piece of open plain. Indraprastha would therefore mean the plain of Indra, which was seemingly the name of the first settler. Popular tradition assigns the five pat to the five Pandu brothers. The above five pat or prastha were given by Dhritarashtra to the Pandu, and from Pat comes Pati, a township.—*Cunningham; Travels of a Hindoo*.

PAT. HIND. A deity of the Bhuiya, a mountain god; amongst the Kol, sacred high places. See Kisan.

PAT. MAHR. A second marriage of a woman among the lower classes of the Mahrattas, whether of a girl whose betrothed husband has died, or of a widow, or of a divorced woman.

PATAKAM. TAM., TEL. The sectarian mark on the foreheads of Hindus.

PATALA, the Hindus recognise seven regions beneath the earth, viz. Atala, Vitala, Nitala, Gabhastimat, Mahatala, Sutala, and Patala. These are inhabited by the Naga, Daitya, Yaksha, Danava, and others. The Daitya and Danava dwell in Rasatala, the sixth region; and in Patala, the seventh, Vasuki reigns over the chief Nagas or snake demi-gods. The lowest of the seven lower worlds, by Ziegenbalg was identified with Naraka, hell.—*Dowson; Hind. Theat.* ii. p. 270; *As. Res.* xi. 91.

PATALA or Pitasila, the capital of Lower Sind, identified with Nirankot or Hyderabad, also called Patalpur. The position of Nirankot is fixed at Hyderabad by the concurrent testimony of M'Murdo, Masson, Burton, and Eastwick. Sir Henry Elliot alone places it at Jarak, as he thinks that that locality agrees better with the descriptions of the native historians. From a comparison of the narratives of Arrian and Curtius, it appears that the raja of Patala, having made his submission to Alexander at Brabhmana, or the city of Brabhmana, the conqueror sailed leisurely down the river for three days, when he heard that the Indian prince had suddenly abandoned his country and fled to the desert.—*Cunningham's Ind.* p. 279.

PATALENE, the country about Tatta on the Indus. See Bactria; Greeks of Asia.

PATALIPUTRA, the Palibothra of Greek writers. It was the capital of the Nanda dynasty and of the Maurya dynasty, which was founded by Chandragupta, and which succeeded the Nanda as rulers of Magadha.

When Hiwen Thsang, in the beginning of the 5th century, entered the capital of Magadha, the city, originally called Kusumapura, had been deserted for a long time, and was then in ruins. It was 70 li or 11½ miles in circuit, exclusive of the new town of Pataliputra-pura. This name the Greeks slightly altered to Palibothra, on the authority of Megasthenes, whose account is preserved by Arrian. That writer says—The capital city of India is Palibothra, in the confines of the Prasii, near the confluence of the two great rivers Erannobos and Ganges. Erannobos is reckoned the third river throughout all India, and is inferior to none but the Indus and the Ganges, into the last of which it discharges its waters. Megasthenes assures us that the length of this city is 80 stadia, the breadth 15; that it is surrounded with a ditch, which takes up 6 acres of ground, and is 30 cubits deep; that the walls are adorned with 570 towers and 64 gates. Diodorus attributes the foundation of the city to Herakles, by whom they mean Bala-Rama, the brother of Krishna, but this early origin is not countenanced by the native authorities. According to the Vayu-Purana, the city of Kusumapura or Pataliputra was founded by raja Udayasawa, the grandson of Ajatasatru, who was the well-known contemporary of Buddha; but the 'Mahawanso' makes Udaya the son of Ajatasatru. According to the Buddhist accounts, when Buddha crossed the Ganges on his last journey from Rajagriha to Vaisali, the two ministers of Ajatasatru, king of Magadha, were engaged in building a fort at the village of Patali as a check upon the Wajji, or people of Vriji. Buddha then predicted that it would become a great city. From these concurring authorities General Cunningham concludes that the building of the city of Pataliputra was actually begun in the reign of Ajatasatru, but was not finished until the reign of his son or grandson Udaya, about B.C. 450. Prior to Hiwen Thsang's visit, Pataliputra had been deserted for Rajagriha or Behar; and another Chinese missionary, who wrote in A.D. 640, states that Pataliputra was a mass of ruins when he had seen it. Dowson says it is the modern Patna.—*Dowson*. See Patna.

PATALPURI is a remarkable place, most probably once above ground, but on which two

united rivers have deposited their silt and formed a soil. A cave leads to a spacious square temple, about seven feet high, the roof of which is supported by thick walls and ranges of pillars. In its middle is a large lingam of Siva, over which water is poured by the pilgrims. Surrounding this presiding deity are other gods and goddesses of the Hindu pantheon. Towards the left is seen a dead forked tree, which with its withered trunk has stood there for several hundred years. General Cunningham's Archaeological Report states that, according to Hiwen Thsang, Allahabad was situated at the confluence of the two rivers, but to the west of a large sandy plain. In the midst of the city there was a Brahmanical temple, to which the presentation of a single piece of money procured as much merit as that of one thousand pieces elsewhere. Before the principal room of the temple there was a large tree with wide-spreading branches, which was said to be the dwelling of an anthropophagous demon. The tree was surrounded with human bones, the remains of pilgrims who had sacrificed their lives before the temple,—a custom which had been observed from time immemorial. This tree is now situated underground at one side of a pillared court, which would appear to have been open formerly, and which is supposed to be the remains of the temple described by Hiwen Thsang. Originally, both tree and temple must have been on the natural ground-level, but from the constant accumulation of rubbish they have been gradually earthed up, until the whole of the lower portion of the temple has disappeared under ground. The upper portion has long ago been removed, and the only access to the Akshay Bat now available is by a flight of steps which leads down to a square pillared courtyard.—*Tr. of Hind.* i. p. 313.

PATAMAR, a vessel employed in the coasting trade of Bombay to Ceylon. Patamar vessels may be considered the best in India, as they sail remarkably well, and stow a good cargo of merchandise. They are grab-built, that is, with a prow stem, which is the same length as the keel; and the dimensions of the large class are 76 feet 6 inches in length, 21 feet 6 inches in breadth, 11 feet 9 inches in depth, and about 200 tons burden. They are planked with teak, upon jungle-wood frames, and are really very handsome vessels, being put together in the European manner, with nails, bolts, etc.; and their bottoms are sheathed with inch-board, and a layer of chunam mixed with coconut oil and a portion of dammer (country resin). This is a very durable substance, and a great preservative to the plank against worms. Some of the smaller class of these vessels, of about 60 tons burden, are sewed together with coir, as other native boats are. The small class has one, and the large class two masts, with the lateen sail, the foremost raking forward for the purpose of keeping the ponderous yard clear when it is raised or lowered. The yard is slung at one-third of its length; the tack of the sail is brought to the stern-head, through a fixed block, and the sheet hauled aft at the side, as usual. The halyard is a pendent and treble block, from the masthead aft to midships, thus acting as a backstay for the mast's security, together with about two pairs of shrouds. These vessels generally export salt from Bombay to the coast, and take back coir, rice, cocoanuts, copra,

oil, timber, sandal-wood, pepper, and various articles, the production of the coast. They are navigated with much skill by men of the Moplah sect and other Muhammadans, and have a crew of ten or twelve men, and a tindal, who are good pilots and navigators off the coast from Bombay to Cape Comorin; generally speaking, honest and trustworthy.

PATANI, a Malaya-Siamese province. The Orang-patani are supposed by Captain Osborn to be identical with the Orang Laut, or men of the sea. They hunt in small groups east and west of the Straits of Malacca. Under fifty different names they are known to the inhabitants of Siam, Java, Sumatra, Borneo, and the Moluccas, and in all cases bear a bad reputation. With the Sarkab or fish-spear and the Parang or chopper as their only implements, they eke out a miserable subsistence from the rivers and forests; rice is a luxury. Tobacco they procure by the barter of fish, and a few marketables collected from the forests and coral reefs. Their personal appearance is unprepossessing, and their deportment lazy and slovenly, united to much filthiness of person.—*Osborn's Quedah*, p. 254.

PATANJALA, SANSK. from the sage Patanjali; which word is made up of Pat, to throw down, and Anjali, joined hands. This conjunction teaches us that people went before him for instruction with joined hands.

PATANJALA, SANSK. A philosophy of the Hindus. In it are five afflictions, viz. Avidya, Asnuta, Abhinivesa, and Dwesha.

PATANJALI. There were two celebrated ancient Hindu authors of this name. One was the founder of the Yoga philosophy, the other the great critic of Panini and Katayayana, styling his book the Great Commentary, Maha-bhashya. It is a commentary on the Vartikka, or critical remarks of Katayayana on Panini. His mother's name was Gonika. He was born at Gonarda (hence his other names, Gonika putra and Gonardhya), in the east of India, but he resided for a time in Kashmir. He wrote between B.C. 140 and 120. There is no grammatical author who can be held superior to him. Mr. Growse (p. 57) mentions that he was a native of Gonda in Oudh, lived about B.C. 150; and adds that Patanjali mentions the local worship of Krishna and Balarama at Mathura, and quotes from poems descriptive of their lives. (This may be the Patanjali noticed by Ward (iv. 9) as the son of Angira and Sati, born in Havrita Varsha, where his parents resided, and he was known also as Pingala-charya and Pingala-naga.) The other Patanjali is the author of the Yoga system of philosophy, which forms one of the great schools of Hindu metaphysical doctrine, and is distinct from the Vedanta, the Nyaya, the Mimansa, and many others of equally marked but indifferent character. It is a theistic philosophy. He was the founder of the doctrine and practice of Hindu asceticism; and his doctrine, if it did not precede Buddhism, must have closely followed.

PATAR, HIND. A dancing girl attached to a Hindu temple; also a Murli, or woman devoted to the gods.

PATAR, also Pathar. HIND. Mountains. Central India is a table-land of unequal surface from 1500 to 2500 feet above the sea, bounded by the Aravalli mountains on the west, and those of the

Vindhya on the south, supported on the east by a lower range in Bundelkhand, and sloping gradually on the north-east into the basin of the Ganges. It is a diversified but fertile tract. The Patar, or plateau of Central India, is distinct from the Vindhya to the south and the Aravalli to the west, and its underlying rock is trap. The whole of the plateau of Central India was once under the princes of Chitore, but the sack of this famed fortress by Ala-ud-Din, and the enormous slaughter of the Gehlotes, had so weakened their authority, that the aboriginal Meenas re-possessed themselves of all their native hills, or leagued with the subordinate vassals of Chitore.—*Tod's Raj*. ii. p. 457.

PATARI, a wandering tribe of people who speak the Telugu language, some of whom have travelled into the Mahratta country, pursuing their avocation of manufacturers of hand-mills, from which they are also named Chakki Karne-walay by Muhammadans, and are seemingly identical with the Takinkar. They have a deity whom they term Satwai, whose emblem is suspended around their necks, and resembles the forms worshipped as Hanumantu. They dwell within the walls, in huts made of a fine grass. They marry at all ages; they do not eat the cow or bullock, and they bury all their dead.

PATEL, amongst the Mahrattas, the headman of a village, from Pati, head of the community. Opinions are various as to the origin and attributes of the Patel, the most important personage in village sway. But there is no doubt that both office and title are of ancient growth. The office of Patel of Mewar was originally elective; he was 'primus inter pares,' the constituted attorney or representative of the commune, and, as the medium between the cultivator and the government, enjoyed benefits from both. Besides his *bapota*, and the *seerana*, or one-fortieth of all produce from the ryot, he had a remission of a third or fourth of the rent from such extra lands as he might cultivate in addition to his patrimony. The Patel of the Dekhan, and of the west and centre of Hindustan, is the Mandel of Bengal, and the Makaddam of other districts, especially where there are, or have been, hereditary village landholders.

PATELLA, a large clumsy boat on the Ganges, in use for baggage, cattle, etc.

PATELLIDÆ, the limpet family of molluscs.

PATERA, a small boat-shaped cup, in use in the religious rites of the Hindus. It is called also an Argha, also Argha patera, and also Jhula. The Patera or Jhula of the Jogi ascetic is a hollow gourd; that of the Hindu deity Hari, the god of war, is the human cranium; the Jhula or begging scallop of the Muhammadan fakir is a gourd or a double coconut. Fakir ke jhulê mén tākra kōn dala?—Who threw the piece into the fakir's scallop?—indicates a child of unknown parentage.

PATHA. HIND. Fibre of the *Chamerops* Ritchiana, of which mats, etc., are made.

PATHAN, a name applied in a loose manner to all the tribes bordering on the common frontiers of India, Afghanistan, Persia, and Balkh. The people are now found in all parts of British India, mixed with the rest of the inhabitants. The greatest colony is that founded chiefly by the Yusufzai at no very remote period. They have been known to the British as Afghan, Pathan, and Rohilla. The source of the name is doubtful. Pihtan or

Pathan, given as one source of the term, is said to have been a titular designation bestowed by Mahomed on an Afghan of the name of Kais or Kesh, who visited Mahomed at Medina. It is also claimed to be a corruption of the Arabic Fathan (a conqueror), or a derivation from the Sanskrit Paithna, to penetrate (into the hostile ranks). It is an honourable term in Arabia, where Khurasani (a native of Khorasan) leads men to suspect a Persian. The Karani, Ashtarani, Mashwani, and Wardak of the North-West Frontier call themselves Pathans, but they are deemed of different origin from the Afghan. The Karani includes the Orakzai, Mangal, Khatak, Afridi, and Khugiani tribes, and the Waziri are sometimes included among these. The Wardak are in the valleys of the Sokhta and Ghazni rivers. They are quiet and hospitable, and their country is well cultivated. The Afghans call themselves 'Ban i Israel,' or children of Israel, but consider the name of 'Yahudi,' or Jew, as opprobrious. They affirm that Nebuchadnezzar, after the destruction of the temple of Jerusalem, removed them to Bamian (the present Kābul), and that they were called Afghans, after their leader Afghana, who was a son of the uncle of Asaf (Solomon's vizir), who was the son of Berkin. This person's pedigree is derived from a collateral branch, his own father being unknown, which is not at all uncommon in the east. They say that they lived as Jews till Kalid (who obtained the title of khalif), in the 1st century of the Muhammadan era, called on them to take part in the war against the infidels. For these services the khalif gave their commander, Kysee, the title of Abd-ur-Rashid, which means the son of the mighty, and appointed him 'Butan' (an Arabic word), or head of his tribe (answering to a clan in Scotland). It is supposed to be from this title that the Afghans were called, in India, Patan. After the campaign under Kalid, the Afghans returned to their native country, and were governed by a royal race, descended from Kyani or Cyrus, till the 11th century, when they were conquered by Mahmud, who established his power in Ghazni, conquered part of India, and founded the Afghan kingdom, which continued till Baber, a descendant of Tamerlane, founded the Mongol empire. Such is their belief.

Afghans have never migrated in large bodies, but have accompanied the Muhammadan rulers of India, all of whom have entered from Afghanistan, and brought bodies of the Pathan with them. Some of these have settled in many places throughout Northern India, and in some parts of the south, some of them in villages, where they own and cultivate the soil. They have been in considerable numbers in the native army of British India, particularly in the corps of irregular cavalry, and in Northern India, in the civil service of Government. A few Pathan settlements are found in the Panjab and about Delhi. They are numerous in the Upper Doab and Rohilkhand, and, all over India, Pathan principalities, jaghirs, and families were met with till the beginning of the 19th century.

They came in without their women, and have intermarried with other Muhammadans, and with Hindus. Tod relates (*Rajasthan*, ii. pp. 22, 23) that in S. 1572 (A.D. 1516) a desultory band of Pathans made an incursion during the fair of

the Tij, held at the town of Peepar, and carried off 140 of the maidens of Maroo. Between A.D. 1157 and 1526, 20 Pathan kings ruled in Hindustan. The average duration of their rule was 94 years. The only Pathan dynasty now in British India is that of the Begum of Bhopal.

Wherever Pathan dynasties ruled in India, their architectural remains are of a magnificent character. At Delhi, Agra, Mandu, and Burhanpur, ruins of palaces, mosques, and mausoleums attest the magnificence of their founders, and their noble, scientifically constructed fortifications attest their skill. Of the early Pathans of the Ghori and Khilji dynasties, from A.D. 1193 to 1321, there may be noticed the Kutub Minar, of majestic beauty, erected A.D. 1200, and the stern grandeur of Taghaluqabad, A.D. 1321. The style is different of the later Pathan of the Taghaluq and Saida dynasties, A.D. 1321 to 1451, from the Afghan of the Lodi dynasty, A.D. 1451 to 1526. The usual form of a Pathan tomb was an octagonal apartment surmounted by a dome, the apartments surrounded by an arched verandah, the arches rising from square columns.

Pathans to the west of the Indus, as well as a few to the east of it, in the north of the Hazara district, and west of that of Rawal Pindi, speak Pushtu. The Pathan are the only people of Central Asia who in comparatively recent times have come to reside to any considerable extent in India. The Pathan tribes had advanced into the north-east corner of Afghanistan within comparatively recent historical times, for the lower valleys of the Kabul country were once occupied by Hindu races, and the peaks of the Safed Koh, between Jalalabad and Kabul, bear such Hindu names as Sita, Ram, etc. The term Afghan is hardly known to the people whom Europeans so designate, for the tribes have not as yet coalesced into a nation.

PAT'HAR. HIND. Any stone, a monument, a tombstone, a pallia. Pat'har ka phul, a lichen. Haiza-ka pattar, Kalanchoe varians. Mit pattar, Machilus odoratissimus. Til pattar, Acer creticum and A. cultratum. Colonel Tod says he was particularly struck with the monument of a Charan bard, to whose memory they had set up a pallia or tombstone, on which was his effigy, his lance at rest, and shield extended, who most likely fell defending his tauda. The tract had been grievously oppressed by the banditti who dwelt amidst the ravines of the Bunas, on the western declivity of the plateau. 'Who durst,' said his guide, 'have passed the Pat'har eighteen months ago? the Meenas would have killed you for the cakes you had about you; now you may carry gold. These green fields would have been shared, perhaps reaped altogether, by them; but now, though there is no superfluity, there is play for the teeth, and we can put our turban under our heads at night without the fear of missing it in the morning.' At one of the cairns in the midst of the wood, his people all paused for a second; it was raised over the brother of the Bhatti thakur, and each, as he passed, added a stone to this monumental heap.—*Tod*, ii. p. 659.

PAT-HA-YOU-SHA. BURM. A bast of Arakan, from a species of Musa; strips 7 feet in length; fine in texture, light coloured; formed of several easily diffusible layers, the outer layers

rather dense and compact, and the inner cancellar.—*Royle*.

PATHI. BURM. The term by which, in Burma, native-born Muhammadans are known.

PATHI, HIND., of Shahpur, a weight of wool, equals the shearing of one fleece of a sheep.

PATHRAINI. HIND. An iron graver used in Multan for tracing patterns for gold inlaying work, seemingly a corruption of pattern.

PATI. HIND. A township; in the N.W. Himalaya, a subdivision of a district.

PATIALA, a native state in the Panjab. It belongs to the group known as the Cis-Sutlej States, and is situated between lat. 29° 23' 15" and 30° 54' N., and long. 74° 40' 30" and 76° 59' 15" E. Its area, 5412 square miles; estimated population (1875), 1,586,000; supposed gross revenue, £457,239. The ruling families of Patiala, of Jind (Jheend), and of Nabha, are called 'the Phulkian houses,' because they are descended from Phul, a Chaudhari, or agricultural notable, who in the middle of the 17th century founded a village in the Nabha territory called after his name. The chiefs of Jind and Nabha are descended from Tiloka, the eldest son of Phul; the Maharaja of Patiala is descended from Rama, the second son, and is a Sikh of the Sidhu Jat tribe. The Patiala maharaja aided the British with supplies in the revolt of 1857, when before Delhi. He was elected a member of the Viceroy's Council, and proposed a bill prohibiting the killing of cows. His widow and her daughters were Christians.—*Aitcheson's Treaties; Imp. Gaz.*

PATINA, in Ceylon, grass land, for the most part rock, barely covered with a superstratum of soil, but producing long grass, and here and there a stunted and thorny bush or tree. Like the prairies of America, the patinas are burned off every year. Grass-covered openings or meadows amount to millions of acres in Ceylon, about the middle of the hills, on which, except the *Careya arborea* and *Emblica officinalis*, trees do not grow. In the lower ranges they are covered with tall lemon grass, *Andropogon schœnanthus*. Coffee, by the use of manures, was unsuccessfully tried on them.—*Simmonds' Dict.*

PATING, HIND., of Tibet, dried apricots brought from Balti.

PATISCHOROEIS of Strabo, the Patiakhari of the cuneiform inscription, are the Bakhtiari of Luristan.

PATKA. HIND. A girdle, a scarf, a labourer's turban, a sash. Zarri-Patka, a gold sash bestowed as an honour or decoration by sovereigns; the national standard of the Mahrattas.

PAT-KOI, a pass leading to Bamo and China. It was the route followed by the Burmans in their invasions of Assam, and is the means of communication between the Singpho tribes on the north and south of the Patkoi mountains.

PATNA. HIND. Patnam, TAM.; Patnama, TEL., SANSK. Any town or capital; a name of Seringapatam, also of Madras, subjoined to many distinctive names of towns, as Seringapatam, Masulipatam, Chinapatam (Madras).

PATNA, a city on the right bank of the Ganges in Bengal, in lat. 25° 37' 15" N., and long. 85° 12' 31" E., with a population of 158,900 souls. It gives its name to a revenue district, and to a revenue commissionership, the latter of 23,726 square miles, and a population in 1872 of 13,122,743

persons. Patna has been identified with Pataliputra of the ancient Hindus, the Palibothra mentioned by the Greek historian Megasthenes, who came as ambassador from Seleucus Nicator to the court of Sandracottus or Chandragupta at Pataliputra, about the year 300 B.C.; and the river Erranobos of Greek writers is the Hiranya baha or gold-bearing stream of the Hindus, the Sone river of the present day. It was also anciently known as Kusumapura, also Pushpapura.

Strabo and Pliny agree with Arrian in calling the people of Palibothra by the name of Prasii, which modern writers have unanimously referred to the Sanskrit Prachya or 'eastern.' But it has seemed to General Cunningham that Prasii is only the Greek form of Palasiya or Parasiya, a 'man of Palasa or Parasa,' which is an actual and well-known name of Magadha, of which Palibothra was the capital. It obtained this name from the Palasa, or Butea frondosa, which still grows as luxuriantly in the province as in the time of Hiwen Thsang. The common form of the name is Paras, or, when quickly pronounced, Pras, which he takes to be the true original of the Greek Prasii. This derivation is supported by the spelling of the name given by Curtius, who calls the people Pharrasii, which is an almost exact transcript of the Indian name Parasiya. The Praxiakos of Elian is only the derivative from Parasar. The city extends for nearly 9 miles along the Ganges, from the suburb of Bankipore on the west, to Jafar Khan's garden on the east. Patna has a Sikh colony. There is a huge incomplete domed granary, built in 1784-1786, which was utilized in the Bengal famine of 1873. In 1851, Maharaja Jung Bahadur rode up its winding staircase. In 1876-77, the imports and exports of Patna town (excluding Government monopoly of opium, and probably omitting a good deal besides) were registered to a value of 7½ millions sterling. The imports alone amounted to more than 4 millions. On 6th Oct. 1763, a number of the British were massacred here by order of Mir Kasim. He wrote to the English authorities, 'If you are resolved to proceed in this business, know for a certainty that I will cut off the heads of Mr. Ellis and the rest of your chiefs, and send them to you.' This threat he carried out with the help of Samru, a Swiss (Walter Reinhardt), on the evening of the 6th October. Mr. Ellis and others, according to a contemporary letter, were decoyed one by one out of the room where they were drinking tea, at seven o'clock, and instantly cut down. About 60 British were thus murdered, their bodies being thrown into a well in the compound of the house in which they were confined. It is said that 200 British were killed at this time throughout Bengal.—*As. Res.* v. p. 280, ix. p. 46, xiv. p. 393.

PATNI. HIND. A Hindu wife, the wife first married.

PATOMKAR, on the Malabar coast, a tenant-farmer.

PATONWA. URIYA. A species of *Gardenia*? of Ganjam and Gumsur; extreme height 20 feet. Used chiefly for firewood, being tolerably common. The fruit thrown into a pond of water kills the fish in it, and it is used for that purpose by the Keyout or fishermen. This mode of catching fish is designated Macho nohneebaro. The fruit is said to be poisonous, but the seeds are used medicinally for fever.—*Capt. Macdonald.*

PATOO or Asta is a bast from Birbhun. It is like the Patwa bast of Bhagulpur.—*Royle.*

PATRA. HIND. The Kataya or wire-drawers' work-bench.

PATRA. TAM. Any leaf used for writing on, the birch bark or palm frond; also a sheet of paper or metal on which grants are engraved. See Patern.

PATRA. HIND. Tha-beit, BURM. Gautama's alms-bowl; it is said to have been sent by king Asoka to Ceylon, and is shown in the Malagawa vihara at Kandy. Fa Hian saw one at Peshawur. It is the Holy Grail of Buddhism.

PAT-RAJ, a Pujari amongst the Mahrattas.

PATRANG. HIND. A silk dress; *Æchmanthera gossypina*.

PATRI. HIND. A neck-chain of silk, carrying amulets. A hone; also a little iron wedge or plate.

PATSHAING. BURM. A drum-harmonicum, a musical instrument used in Burma. It consists of a circular tub-like frame about 30 inches high, and 4 feet 6 inches in diameter. This frame is formed of separate wooden staves fancifully carved, and fitting by tenon into a hook.—*Yule.*

PATSHALA, a village school of Bengal. The discipline in the Patshalas is very cruel. The Calcutta Review mentions that a boy is made to bend forward with his face towards the ground; a heavy brick is then placed on his back, and another on his neck; and should he let either of them fall, within the prescribed period, he is punished with the cane. A boy is condemned to stand on one foot; and should he shake or quiver or let down the uplifted leg before the time, he is severely punished. A boy is made to sit on the floor in an exceedingly constrained position, with one leg turned up behind his neck. He is made to sit with his feet resting on two bricks, and his head bent down between both legs, with his hands twisted round each leg so as painfully to catch the ears. A boy is made to hang for a few minutes, with his head downwards, from the branch of a neighbouring tree. A boy's hands and feet are bound with cords; to these members so bound a rope is fastened, and the boy is then hoisted up by means of a pulley attached to the beams or rafters of the school. The fingers of both hands are inserted across each other, with a stick between and two sticks without, drawn close together and tied. A boy is made to measure so many cubits on the ground, by marking it along with the tip of his nose. A boy is constrained to pull his own ears, and if he fail to extend them sufficiently he is visited with a severer chastisement. The boy who first comes to school in the morning receives one stroke of the cane on the palm of the hand, the next receives two strokes; and so each in succession, as he arrives, receives a number of strokes equal to the number of boys that preceded him, the first being the privileged administrator of them all. Four boys are made to seize another, two holding the arms and two the feet; they then alternately ring him and throw him violently to the ground. Two boys, when both have given offence, are made to knock their heads several times again each other. Again, two boys are made to seize another by the ears, and with these organs well outstretched he is made to run along for the amusement of the bystanders; which latter clause reminds us of the old Roman poet's line—'Omne tulit punctum qui miscuit utile dulci.' Nettles dipped in water

are applied to the body, which becomes irritated and swollen; the pain is excruciating, and often lasts a whole day; but however great the itching and the pain, the sufferer is not allowed to rub or touch the skin for relief, under the dread of a flagellation in addition. This seems bad enough; but here is something worse: The boy is tied up in a sack along with some nettles, or a cat or some other noisome creature, and then rolled along the ground.

PATSO or Patsau, of particoloured silk, is worn by the Burma court and the wealthy Burmans of the capital. In Akyab it is worn there by the Mug race. The Patso of Burma, however, is the cloth worn by all classes. A piece costs up to 24 rupees.

PATTA, also Pat or Pattr. HIND. Any leaf. A lease of land, a deed of lease, a title or appointment to office; a belt as an office badge.

PATTADARI, a lease of land. In India, under British rule, are three land tenures, one known as the Zamindari, or permanent settlement, made in 1793 by Lord Cornwallis, of Bengal proper, and since then extended to Behar and Orissa. In this the lands are divided amongst landlords, who pay a quit-rent to Government, which in Bengal has been definitely settled. Something similar has been proposed for Oudh, as the Talukdari. (2) The Ryotwari tenure in Madras, favoured by Sir Thomas Munro, under which the cultivators are the co-owners of the soil, and pay direct to Government. A modification of this has been introduced into Bombay. (3) The Pattadari tenure was carried out by Mr. R. Martins Bird in the N.W. Provinces, and it has since been extended to the Panjab. In this, Government deals direct with village communities, who are jointly responsible for the assessment.

In Bombay and Madras, Government transacts its revenue business chiefly direct with the cultivating ryot, who is regarded as the feuar or proprietor, paying a feu-duty, and so long as that is paid he cannot be dispossessed. Neither in Bombay nor Madras is there any middleman. In Bengal, however, the British took up the Zamindari system, who, under Muhammadan rule, had been partly a rent-collector and partly a landed proprietor, and elected him to be owner, to the exclusion, in many cases, of the rights of the cultivators. Subsequently the Government, to the exclusion of the real owner, elected the tenant or the village community. In Bengal and Oudh, the land-tax is still levied on estates; in Northern India, on villages and proprietary holdings; but in Madras, on individual fields. In Bombay, however, the taxes levied on the blocks of 10 or 12 acres accords to the convenience of the occupiers, and they are tenants for 30 years. In copper-plate grants dug from the ruins of the ancient Ujjain (presented to the Royal Asiatic Society), the prince's patents (Patta) conferring gifts are addressed to the Patta-cila and ryots. Colonel Tod never heard an etymology of the former word, but imagined it to be from Patta, grant or patent, and Cila, which means a nail or sharp instrument,—metaphorically, that which binds or unites these patents; all, however, having Pati, or chief, as the basis. — *Tod's Rajasthan*, i. 500; *Trans. Asiatic Society*.

PATTA-ISTRI is the first lawful wife of a

king. Pattapu bharya, TEL., the crowned wife of a Hindu ruler.

PATTAL. HIND. Plates made of leaves by the Dosali caste.

PATTAM. TAM. A gold frontlet ornament worn by Hindu women.

PATTANA, Pattan, Patna, Pat'tain. SANSK. A word of Sanskrit origin. Any town or city. It is found in nearly all the languages of British India, as in Masulipatam, Chinipatan (Madras), or simply Patna, Seringapatam. Pattan, the Pattana or Paithana of the ancient Greeks, is supposed to have been the capital of Salivahana. Pattan, in Gujerat, is the ancient Balhara capital. Somanatha and Anhilwara were known as Pattan. Pattan-Somnath is 29 miles N.W. of Diu, in lat. 20° 53' N., and long. 70° 35' E.

PATTANG. HIND. A paperkite. Pattang-bazi, flying kites. Pattang saz, a kite maker.

PATTI, the Swastika of the Buddhists, and the monogram of Vishnu and Siva.

PATTU. HIND. A white woollen cloth; a blanket or wrapper made of Pattu, a breadth of woollen cloth sewn together. Puttu, a thick woollen blanket woven on the Spiti Hills. A coarse, thick fabric made of the refuse wool and long hair from the shawl goat. It is sold in pieces of 10 inches in width and about 21 feet in length at 2 rupees 8 annas or 3 rupees a-piece, according to the quality.

Pattu abshar, striped woollen cloth.

Pattu chet, woollen cloth stamped with a pattern.

Pattu-Dahzang, cloth made at Dahzang, near Ghazni.

Pattu-foduk, a Ladakh woollen fabric.

Pattu Ramnagri, the Pattu fabric made at Ramnagar.

PATUAH, a name of the Juanga race. See Juanga.

PATTY and Pajel are short and pointed-headed chanks; and the Wallampory are the right-hand chanks. Bertolacci mentions, as a peculiarity observed by the Ceylon fishermen, that all shells found to the northward of a line drawn from a point about midway from Manaar to the opposite coast of India, are of the kind called Patty, and are distinguished by a short flat head; and all those found to the southward of that line are of the kind called Pajel, and are known from having a longer and more pointed head than the former. The Wallampory or right-hand chanks are found of both kinds.

PATWA. HIND. A braider, a maker of fringe and tape.

PATWA or Patahra manufacture and sell ornaments made of zinc and tin and other inferior metals, worn by men and women, but chiefly by the latter. They also make trinkets of silk and silk cloth, edged with gold.

The Patwa knit silken cords; and in Behar, where silk is produced, many families are employed in weaving silk cloth, or silk and cotton mixed, or cotton alone.

PATWA. HIND. String and rope made from the fibre of *Bauhinia racemosa*.

PATWA. HIND. The red juicy calyx of *Hibiscus subdariffa* used for making jelly, etc.

PATWARI. HIND. In Hindustan, a village accountant, responsible for keeping the accounts of the village, noticing changes in the list of pro-

PAUCHONTEE.

prietors, and accounting between the headman or Lamberdar and the proprietors for the share of revenue paid by each. In the Dekhan and Southern India, the village accountant is the Kulkarni and Karnam, and in Gujerat the Tallati.

PAUCHONTEE, or Indian gutta tree, is common in the densely-crowded tracts of Coorg, abounding at the foot of the ghats N.E. of Trevandrum, the eastern part of Wynad, Animallay mountains, and Cochin territories, from 8° 30' to 10° 30' N., and at an elevation of 2500 to 3000 feet above the sea. The tree abounds in the Cochin Sircar territory, and on the cardamom table-lands of Travancore, and at the Pool on the summit of the ghats above Chocuraputtee. It appears to be common in all the forest tracts at all within the influence of the S.W. rains. It attains a height of 80 to 100 feet, and a diameter of 2 to 4 feet, and it rises up to a great height without giving off any branches. It is the Pauley tree of Wynad, and the Pauchontee of Cochin. It is the *Isanandra acuminata* of Lindley, and the *Bassia elliptica* of Dalzell. It yields a milky juice, which concretes, and is brittle at an ordinary temperature. It softens by the heat of the hand and mouth, and may be moulded between the fingers. It readily melts by the application of heat, and becomes very sticky. This stickiness is gradually destroyed by contact with water. It forms a paste with coal-tar, naphtha, and oil of turpentine. It has excellent insulating powers, and may be used successfully for coating the wires of telegraphs. It is probable that several thousands of these trees fall annually under the axe of the wood-cutter, as the Government forests in Wynad give way to the extension of coffee-planting, and the private forests in Malabar to raggi cultivation. In 1855, General Cullen forwarded a drawing and description of it. The wood of the Pauchontee tree is in gravity not less than 55 lbs. the cubic foot; and a bar of one inch square, with 18 inches clear of the supports at each end, broke with a long fibrous fracture, after a weight of 440 lbs. had been imposed, though not till this weight had for some minutes been suspended from the bar. This tenacity is as high if not higher than that of teak. A tree when tapped, two taps at every three feet from the base to sixty feet high, or 40 taps in all, yielded in twelve hours about eight pints or pounds of the sap. The exudation from the trunk has some resemblance to the gutta-percha of commerce. According to General Cullen, in 5 or 6 hours upwards of 1½ lbs. was collected from 4 or 5 incisions in one tree.—*Balfour's Report of the Madras Museum of 1856.*

PAULOWNIA IMPERIALIS. Tung, Peh-tung, CHIN. A tree of China and Japan, furnishing an excellent timber, much prized for musical instruments. The large cordate leaves are used as a wash for sores, and to strengthen the hair when turning grey. Bark vermifuge and diuretic.—*Smith.*

PAUMBEN, a small mercantile town on the W. extremity of the island of Ramisseram, in lat. 9° 37' N., long. 77° 17' E. It derives its name from the serpentine character (Pamu, TAM., a snake) of the Paumben channel, which separates the island from the mainland. The population are chiefly Labbai Muhammadans. The Paumben channel is between the islands of Ramisseram and Manaar. These two almost connect Ceylon and

PAVIA INDICA.

the continent, and form what is known as Adam's Bridge at the head of the Gulf of Manaar. The British Government since 1828 have been deepening the channel to thirteen feet of water, so as to render the rounding of Ceylon unnecessary.

PAUNDRAKA, an opponent of Krishna at Benares. Krishna is said to have defeated and killed him, and burned Benares.

PAURAVA, descendants of Puru of the Lunar race.—*Dowson.*

PAUSSIDÆ, a family of insects, comprising the genera *Cerapterus*, *Swed.*; *Pleuropterus*, *West.* Mr. Westwood mentions sixty-two known species, a great portion of which belong to the East Indies.

PAVANA, the Hindu god of the winds. He is by some represented sitting on a deer, holding in his hand a hook for guiding the elephant.—*Cole's Myth. Hind.* p. 111.

PAVANANTI, a Jaina who lived at Sanakapuram. Under the patronage of a king, he commenced the Nannul, the most celebrated Tamil grammar, but died after completing the first two parts.

PAVETTA INDICA. Linn.

Pavetta alba, Vahl.

Ixora paniculata, Lam.

Kukura chura, . . . BENG.

Kakra, HIND.

Malia mothi, . . . MALAB.

Pappana, SANSK.

Pavetta, SINGH.

Ixora pavetta, Rorzb.,
Rheede.

Pavattii maram, . . . TAM.

Papatta chettu, . . . TEL.

Nune papata,

Papati, Tella papata, . . .

An ornamental shrub, 4 or 5 feet high, with white flowers, timber very small. The berries are not very palatable. In Ceylon, very abundant up to an elevation of 3000 feet. β var. *Ambagomowa* district. γ var. Common at an elevation of 3000 to 4000 feet; a third var. occurs at Batticaloa. *P. tomentosa*, found at Tavoy, has flowers resembling a white ixora. *P. breviflora*, D.C., occurs on the Neilgherries.—*M.E.J.R.*; *Ainslie*; *Thw. Zeyl.*; *Mason.*

PAVIA INDICA. Wall. Indian horse-chesnut.

Gugu, gagai-gugai, CHEN.

Pu of KANAWAR.

Gun, Guah, Juah, KULU.

Banakhor, Ban-khor, PANJ.

Ban-akhrot,

Hane, Hanudan, . . . PANJ.

Kanor knor, Kanur, . . .

Tonjaga, PUSHTT.

Jauz makkaddam, . . .

This fine picturesque tree yields a grateful shade. It grows in most of the higher hills, Cis and Trans Indus, at from 4000 to 9000 feet, is found in the Sutlej valley between Rampur and Sungham, at Kulu at an elevation of 5000 to 8000 feet, on the mountains at elevations of from 8000 to 10,000 feet, in Kanaon, Garhwal, and Sirmore, also near the sources of the Ganges and in Kanawar, and attains girths up to 10 and 15 feet. The wood is light-coloured and easily worked, but is not much valued, being used for ordinary building purposes, packing-cases, water-troughs, tea-boxes, and rough pattern-making. Some of the Tibetan drinking-cups are made from it. The root, called Jauz-mukaddam ban-khor, is used for horses in colic, and is recommended as an external application in rheumatism. The seeds contain much fecula, and are eaten by the hill people in times of scarcity, but require long maceration in water first, as they are very acrid. Grows to a very great size and strength; wood soft and strong, of a white colour, veined, fine grained; polishes well; used for building and cabinet-making purposes.—*Royle's*

Ill. p. 135; *Powell*; *Balfour*, p. 185; *Commr. Jullundur Division*; *Dr. Stewart*; *Cleghorn's Panj.*

PAVONIA ODORATA. *Willd.*

P. sidoides, *Horn, D.C.* | *Hibiscus chitibenda*, *Roxb.*
Hibiscus odoratus, *Roxb.*

Bulla, *SAMSK.* | *Mutopolagum*, . . . *TEL.*
Peramutic pu, . . . *TAM.* | *Chitibenda*,
Erra kati, *TEL.* | *Muttava-pulagam*, . . .

It has a most delightful smelling flower, and is one of those with which the arrows of Kama, the god of love, are said to be tipped. *P. rosea*, *Wall.*, is of Burma.—*Ains. Mat. Med.*: *Moor, Pantheon.*

PAVONIA ZEYLANICA. *Cur.*

Hibiscus Zeylanicus, *Linn.*

Sitramuti, *TAM.* | *Tainna mutopolgum*, *TEL.*
 Grows in Southern India, and is used in infusion in fevers.

PAVONINÆ, or pea-fowl, a sub-family of the I'hasianidæ, includes—

Pavo cristatus, *L.* | *P. bicalcaratum*, *L.*
P. Japonensis, *Bennett.* | *P. Napoleonis*, *Massena.*
P. muticus, *Linn.* | *P. chalcurus*, *Temm.*
 Near these are—
Polyplectron Tibetanum,
Temm. | *Argusanus giganteus*,
Temm.

Pavo cristatus, *Linn.*, Pea-fowl.

Taon, *Taon*, . . . *ARAB. GR.* | *Pavon*, *Pavone*, . . . *IT., SP.*
Mabja, *BHUT.* | *Mong yung*, *LEP.*
Pavon, *FR.* | *Pavon*,
Pfau, *GER.* | *Myloo*, *Mail*, *TAM.*
Mohr, *Mor*, *HIND.* | *Nimili*, *TEL.*

The head is surmounted by an aigrette of 24 upright feathers. In the male the tail-coverts consist of feathers with loose barbs and of unequal size, the upper one shortest, each terminated by numerous eyes or circlets of a metallic iridescent brilliancy; these the bird has the power of erecting into a circle or wheel, which presents, when the sun shines on it, an object of dazzling splendour. The female has the aigrette, but has not the splendid ornament with which the male is gifted; her colours generally are sombre. This species is spread over India; it is readily domesticated, and many Hindu temples have considerable flocks of them. The bird, as domesticated in Europe, is identical with the wild bird of India. Colonel Williamson, in his account of peacock-shooting, states that he had seen about the passes in the Junglaterai district surprising quantities of wild pea-fowls. Whole woods were covered with their beautiful plumage, to which the rising sun imparted additional brilliancy. He says there could not be less than twelve or fifteen hundred pea-fowls, of various sizes, within sight of the spot where he stood for near an hour.

Pavo Japonensis, *Aldrov.*, *P. Javanicus*, *Horsfield.* Prevailing tints, blue and green, varying intensity, and mutually changing into each other, according as the light falls more or less directly upon them. In size and proportions the two species are nearly similar, but the crest of *P. Javanicus* is twice as long as that of *P. cristatus*, and the feathers of which it is composed are regularly barbed from the base upwards in the adult bird, and of equal breadth throughout. Head and crest interchangeably blue and green.

The Javan pea-fowl is a splendid bird. It replaces the common pea-fowl in the Malay Peninsula and Java, and is readily distinguished by its different colouring and peculiar crest.

Pavo muticus, *Linn.*, *P. Assamicus*, *M'Clelland*,

is found in all the countries from Assam through Burma to Malacca, and the islands. It has spurs; its crest is composed of about ten or more slender barbed feathers. It has more green and gold and less blue in its plumage than *P. cristatus*.

The black-shouldered pea-fowl, *Pavo nigripennis*, is commonly called the Japan peacock, but is not found in Japan. It occurs wild in Cochin-China.—*Eng. Cyc.*; *Jerdon, Birds of India.* See Peacock.

PAWA or Padraona, an ancient city on the Gandak river, between Kapilavasta and Kasinagara. In the Ceylonese chronicles the town of Pawa is mentioned as the last halting-place of Buddha before reaching Kasinagara, where he died beneath a sal tree.—*Cunningham, Ancient Geog. of India*, p. 434.

PAWAN. HIND. The wind. Pawan-ka-put, lit. Son of the wind. The general of the monkey army that Rama took with him in his expedition against Ceylon.

PAWAN BANS, the name by which the Bhuiya to the south of Singbhum designate themselves.

PAWANG. The Rev. P. Favre, apostolic missionary of Malacca, mentions that the Pawang are priests, teachers, physicians, and sorcerers. Many members of their own nation do not believe that the Pawang have any supernatural powers as sorcerers or as priests. Amongst the Malays their skill is much in honour, and their persons objects both of veneration and of fear. The Malays have a firm faith in the efficacy of the supplications of the Pawang, and an extraordinary dread of their supposed supernatural power. Malays imagine that they are endowed with the power of curing every kind of sickness, and of killing an enemy however distant he may be, by the force of spells; and with the gift of discovering mines and hidden treasures. It is not uncommon to see Malay men and women, at the sight of a Binua Pawang, throw themselves on the ground before him.—*Journ. Ind. Arch.*, Feb. 1849, p. 115.

PAWARUJA, a class of dancers at public festivals. They are found in the districts east of Ondh.—*Sherring's Hindus*.

PAXITIRTHA. Taranatha, in his history of Indian Buddhism, mentions Paxitirtha in Tibetan as a Buddhist temple, or, in the Tibetan corresponding name, Bird convent. It is now called the Trukkaz Hukunram, and is 36 miles S. of Madras; and the kites at it are fed at noon. The temple is now devoted to Siva, but the inscriptions show that it was once a Jain temple.

PAXIUBA, a palm of the Rio Negro, is the *Iriactea exorrhiza*.

PAYAKARI. KARN., TEL. A temporary cultivator.

PAYANELIA MULTIJUGA. *D.C.* A timber tree of the Andamans.

PAYASA, in Brahmanism, sacred food, consisting of rice and milk. It is prepared at Brahmanical sacrifices. Payasa-homa, a Hindu sacrifice with ghi and fire, also with rice and milk, but products of the cow are mixed with them.

PAYUNG in Malay and Javanese, and Song-song in Javanese only, an umbrella. Among the civilised nations of the Malayan Archipelago, this is the universal badge of rank, from the prince to the humblest office-bearer, and stands instead of the crowns, coronets, stars, and ribbons of the

nations of Europe. The quality of the party is expressed by its size, colour, or material.—*Crawford's Dict.* p. 330.

PA-ZEND. The book containing the religious code of the present Parsees is called the Vendidad. It has undergone three various processes of composition, of the Avesta, Zend, and Pa-zend. The Avesta is of very ancient date, and is the groundwork of the present Vendidad, though all of it almost is post-Zertushtrian. In the course of time, several explanations and interpretations of the laws were made, which acquired as much force as the original, and were incorporated with it. This is the Zend, and the incorporation of further explanations was styled the Pa-zend. Avesta means direct higher knowledge, divine regulation. Zend means the explanation of this, and Pa-zend the supplement to the Zend, or further explanation of the Zend doctrine. All the three steps exist in the present Zend Avesta, or more properly Avesta Zend.—*Bunsen*.

PE, in the weights of Burma, is the 1-20th part of a kyat or tikal.

PE. TAM. Wild, uncultivated; a devil.

PEA, *Pisum arvense*, *P. sativum*.

Tsing-sian-tau, . . . CHIN.	Kachang, . . . MALAY.
Wan-tau,	Kirseneh, PERS.
Erwten, DUT.	Goroeh, RUS.
Pois, FR.	Hareuso, SANSK.
Erbsen, GER.	Pesoles, Guisantes, . . SP.
Battana, HIND.	Pattani, TAM.
Bisi, Piselli, IT.	Gundu sanighelu, . . TEL.
Wan, JAP.	Burtshak, TURK.

The pea is grown as a vegetable throughout all the southern and eastern parts of Asia, wherever Europeans reside. It is a well-known leguminous plant, of which two species are commonly distinguished in Britain,—the grey field-pea, and the white or yellow pea. Of these two species there are many varieties. The large white, green, and brown are the common pea in the Dekhan; the latter sort are boiled, and eaten often in the shell. Peas may be sown there in the beginning of June, and continued at pleasure until February. In sowing, they should not be too thin, or placed deeper in drills than two inches, and a space of three feet between the rows; the first crop in double rows, with a space of a foot between. When they are ready to climb, earth up both sides well, leaving room for the water to run in the middle. Then place good strong sticks in the centre of the rows, and on the outer side of each lay good old manure, after which little trouble is required. Keeping them free from weeds is of course essential; and to preserve the seed, take care and remove any of the plants that appear of a different kind when in blossom; also draw out all the thin and bad-looking plants, to prevent the pollen impregnating the good, and if this seed be the produce of the rain-crop, if sown again in the cold weather they will be much finer and last longer than the seeds of the former season. For late crops, put down in single rows, and in lines from east to west; this enables the sun to act upon the whole, and tends to prevent mildew from damp on the stalks. In growing crops that you do not intend to stick, it is advisable to put brushwood on one side for them to creep over, and prevent much loss in seed from damp and otherwise. The kinds that grow best at Madras are the Bangalore and Cape seed, sown in drills after the heavy rains are over. The

best manure for this vegetable is street sweepings and wood ashes.

The country pea of British India is sown after the rains in drills, and varies in price according to the quality; when green they are tolerable as a vegetable, but are best in soup. Procurable in December and January.

The Japan pea has been introduced into the United States, and returns 200 and 300 per cent.

In chemical composition the *P. sativum* of India has moisture, 12.65; nitrogenous matter, 23.50; starchy matter, 60.28; fatty or oily matter, 1.61; and mineral constituents, 2.41.

The chick-pea, or Bengal gram of India, is the *Cicer arietinum*, the pigeon-pea is the *Cajanus Indicus*, and the pea-nut is the *Arachis hypogea*.—*Agricultural Report for 1854 from Commissioners of Patents to House of Assembly; Faulkner; Riddell; Jaffrey*.

PEACH, *Amygdalus Persica*.

Khookl, ARAB.	Ardo, Shaft-alu, . . . HIND.
Tau, Ping-t'au, . . . CHIN.	Accusare, IT.
Hoh-t'au, Sien-kwo, . . .	Shaft-alu, . . . PERS., TURK.
Pecho, FR.	Kardi, Kulloo, Aroo, . . SP.
Pärsiche, GER.	Malo coton,

The peach was introduced into Europe from Persia, a country in which the fruit is very fine, and where both the free and cling stone varieties are known, and called Kulloo and Kardi. It has been supposed to be a native of the oases of Egypt, in consequence of its name, Burkook, being probably the original of the old term apricoke and præcocia.

There are two varieties in the Panjab plains, one, a round fruit, which is elongated to a point on one side; this is called Noki (Nok, a point). The other is a flat fruit, like the Chinese peach, and is called Tiki; the latter is much superior both in juiciness and flavour. At Kandahar there are two sorts, one small and strong flavoured, called Babri, and one large and luscious, called Tirwah.

At Kabul it is said to be preserved in fourteen different ways, with and without the stones, or the kernel left, or an almond substituted. It is generally brought in this state into N. India, under the name Khoolani; the Arabic name is Mish-mish; in Bokhara, where they are particularly fine, they are called Bakur khani. In the Himalaya the fruit is called Zard-aloo, Chooloo, and Chinaroo; in Kanawar the fruit is dried on the tops of their houses, and, when pounded, mixed with their meal. It is chiefly cultivated on account of the beautiful oil which is expressed from the kernels. These may also be found in the bazars, under the name of Badam-kohi, or hill-almonds. The oil has a slight smell of hydrocyanic acid, and must resemble that from almonds, especially the bitter kind, or that obtained from *Prunus brigantia*. They ripen well and are of a fine flavour in Peshawur; also in the north of India, with the well-flavoured flat peach from China. With care, it succeeds also in the elevated lands of Mysore, Ahmadnaggur, and Dowlatabad. It is found wild in different parts of the Himalaya, as about Mussoori, at elevations of 5000 and 6000 feet. In the district of Bissehur there is a distinct kind, called Bhemi by the natives, *Persica saligna*, *Royle*, which, though small, is juicy and very sweet.

In the vicinity of Shanghai is a fine and large

variety of peach, which comes into the markets there about the middle of August, and remains in perfection for about ten days. It is grown in the peach orchards a few miles to the south of the city; and it is quite a usual thing to see peaches of this variety 11 inches in circumference and 12 ounces in weight. Trees of the Shanghai variety are now in the garden of the Horticultural Society of London. In China, Yu-t'au is the nectarine; Ping-t'au and Hoh-t'au are names of the flat peach; and the Kin-t'au is a yellow-fruited peach. The peach is supposed to be a modified almond under cultivation; and though many hundred varieties have been produced, the peach and the almond are believed by Professor Koch to be of the same stock.

The nectarine is found in gardens in Northern India, where it is called Shaft-alu and Moondla-aroo (smooth), though it does not perfectly ripen its fruit, nor is it known from whence it was introduced, though probably from Kābul. The apricot is very abundant around almost every village in the Himalaya, rendering it difficult to ascertain whether it be ever found wild, as the trees remain the only vestiges of deserted villages.—*Drs. Wall. Cat.; Royle, Ill. Him. Bot.; Riddell; J. L. Stewart.*

PEACH GUM, T'au kiau, CHIN. In China employed medicinally.

PEA-FOWL.

Pea-fowl,	ARAB., GR.	Marak,	MALAY., JAV.
Paon,	ENG.	To-gei,	MALEAL.
Pfau,	FR.	Manura,	SANSKR., JAV.
Tukeyun,	GER.	Sikhin,	"SINGH.
Tukhi-im,	HEB.	Tokel,	"TASH.
Pavo,	LAT.	Tawuss-kushu,	TURK.

There are three species of pea-fowl known in India, *Pavo cristatus*, *P. Japonensis*, and *P. muticus*, *Linn.*, the former of British India; the latter is from Assam to the Malay Peninsula, Java, and Sumatra, and has never been domesticated by the natives of the Archipelago. *P. cristatus* and *P. muticus* are wild species; and Mr. Selater has lately named *P. nigripennis*, but its country is unknown. Peacocks are called in Hebrew, Tukhi-im; and the name still used on the coast of Malabar is To-gei, which in turn has been derived from the Sanskrit Sikhin, meaning crested. In many parts of India they live in a semi-domestic state in and about the villages. The peacock is said to have been introduced to Europe by Alexander the Great. Pea-fowl were so rare in Greece, that a male and female were valued at Athens at a thousand drachmæ, or £32, 5s. 10d. Samos possibly was the next place they were known at, where they were preserved about the temple of Juno, being a bird sacred to that goddess. But their use was afterwards permitted to mortals, for Gellius, in his *Noctes Atticæ* (c. 16), commends the excellency of the Samian peacocks. They were, however, known in Judea many years before the days of Alexander, and are noticed, with apes, in 1 Kings x. 22, 2 Chronicles ix. 21, the words translated being found in the Sanskrit.

The peacock was a favourite armorial emblem of the Rajput warrior; it is the bird sacred to their Mars (Kumara), as it was to Juno, his mother, in the west. The feather of the peacock is used to decorate the turban of the Rajput, as that of the warrior of the Crusade, adopted from the Hindu through the Saracens. 'Le paon a

toujours été l'emblème de la noblesse. Plusieurs chevaliers avaient leurs casques des plumes de cet oiseau, un grand nombre de familles nobles le portaient dans leur blazon ou sur leur cimier, quelques uns n'en portaient que la queue.' A bunch of peacock's feathers is still the implement of conjuring, and is carried by mendicants in India who pretend to skill in magic; it is especially borne about by Jaina vagrants. The peacock enters into the Hindu mythology. Siva, for the amusement of Parvati, his bride, originated a particular dance, to the musical accompaniment of the tabor, struck by his attendant Nandi. His sons were present,—Kartikēya, mounted on his peacock, and Ganesa with the head and trunk of an elephant. Siva is embellished with a collar of the hooded snake twining round his neck and surmounting his head. The peacock is supposed to be particularly delighted by the approach of the rainy season; and the bird of Kartikēya, mistaking the deep sound of the drum for the rolling of thunder indicative of a storm, screams with delight. The peacock is considered the natural enemy of snakes; and the snake of Siva, alarmed at the approach of his mortal foe, deserts his place on the neck of the deity, and makes for the first hiding-place he can find. This happens to be the tip of Ganesa's elephant trunk, his entrance into which disturbs the bees that are supposed to settle on the temples of an elephant. The European fable of the jackdaw borrowing the plumage of the peacock, has its counterpart in Ceylon, where the popular legend runs that the pea-fowl stole the plumage of a bird called by the natives Avitchia. This bird utters a cry resembling the word Matkiang! which in Singhalese means, 'I will complain.' This they believe is addressed by the bird to the rising of the sun, imploring redress for its wrongs. The Avitchia is described as somewhat less than a crow, the colours of its plumage being green mingled with red. The wild pea-fowl of the jungles is a good bird for the table, and when young is no despicable food.

The throne of Shah Jahan was in the form of a peacock with a spread tail, and is famed in history as the Peacock Throne, which Nadir Shah carried off from the sack of Delhi. The colours of the tail were represented in natural colours by sapphires, emeralds, rubies, and other appropriate gems, which formed the chief ornament of a mass of diamonds and precious stones that dazzled every beholder. Tavernier, a jeweller by profession, mentions the common belief that it cost 160,500,000 livres, nearly six millions and a half sterling. But the author of the Nadir Namah only names two millions, and Scott only one million sterling.—*Elphinstone*, p. 530; *Crawford's Dict.*; *Darwin, Origin of Species*; *Muller's Lectures*, p. 190; *Tod's Rajasthan*, i. p. 137; *Hind. Theat.* ii. pp. 10, 306; *Tennant's Nat. Hist.* p. 244; *Pennant's Hindoostan*, i. 211. See *Pavonina*; *Sacti*; *Vahan*.
PEAH SAL, or Yegasee, a timber of the Northern Circars.

PEAR, *Pyrus communis*.

Kwo-taung,	CHIN.	Naspati,	HIND., PERS.
Po-li, Peh-li,	"	Pera,	IT., PORT., SP.
Hiang-li, Sineh-li,	"	Nakh,	PUSHTU.
Pare,	DAN.	Ghrusha,	RUS.
Pure,	DUT.	Paron,	SWED.
Poire,	FR.	Armud,	TURK.
Birne,	GER.		

The fruit of the *Pyrus communis*, a tree of Europe, China, and Kashmir, and introduced into India from China, in the north of which countries are several varieties. But the term pear is given to several other fruits, as see Holy Garlick pear, Anchovy pear, Sand pear, Prickly pear.

PEARL.

Looloo, Lulu, . . . ARAB.	Mutiya lulu, . . . MALAY.
Yang-chu, . . . CHIN.	Marwarid, . . . PERS.
Perle, . . . DAN., FR., IT.	Porola, . . . PORT.
Paarlen, Parol, . . . DUT.	Shemtschug, Perlii, . . . RUS.
Perlen, . . . GEB.	Maracata, . . . SANSK.
Maragdos, Margarites, GR.	Mootoo, Mutu, . . . SINGH.
Mutti, . . . GUJ.	Perlas, . . . SP.
Moti, . . . HIND.	Perla, . . . SW.
Kaino-taimua, . . . JAP.	Muttu, . . . TAM.
Margarita, . . . LAT.	Mutiamu, . . . TEL.
Muti, Mutya, . . . MALAY.	Inji, . . . TURK.

Pearls are found in several molluscs inhabiting shallow seas and sandbanks in the old and new world, but the most productive mollusc is the *Meleagrina margaritifera* or *Avicula margaritifera*, the pearl oyster; and the best known localities are the Persian Gulf, the west coast of Ceylon in the Gulf of Manaar, Panama, the shores of California, Australia, Red Sea, Arabian coasts, the Aru Islands, Zebu, the Sulu Archipelago, Mindanao, coast of New Guinea, Torres Straits, Gulf of Omra, and coasts of Japan.

Friar Jordanus, a quaint old missionary bishop, who was in India in 1330, says that 8000 boats were engaged in this fishery and that of Ceylon, and that the quantity of pearls was astounding and almost incredible. The headquarters of the fishery was then, and indeed from the days of Ptolemy to the 17th century continued to be, at Chayl or Coil, literally, the temple, on the sandy promontory of Rannad, which sends off a reef of rocks towards Ceylon, known as Adam's Bridge. And Ludovico di Varthema mentions having seen the pearls fished for in the sea near the town of Chayl, in about A.D. 1500; and Barbosa, who travelled about the same time, says that the people of Chayl are jewellers who trade in pearls. This place is, as Dr. Vincent has clearly shown, the Koru of Ptolemy, the Kolkhi of the author of Periplus, the Coli or Chayl of the travellers of the Middle Ages, the Ramana-Koil (temple of Rama) of the natives, the same as the sacred promontory of Rannad and isle of Rameswaram, the headquarters of the Indian pearl fishery from time immemorial.

In Arabic poetry, pearls are fabled to be drops of vernal rain congealed in oyster shells. Benjamin of Tudela says that in the month of March the drops of rain-water which fall on the surface of the sea are swallowed by the mothers-of-pearl, and carried to the bottom of the sea, where, being fished for and opened in September, they are found to contain pearls. The Hindus poetically describe them as drops of dew falling into the shells when the molluscs rise to the surface of the sea in the month of May, and becoming, by some unexplained action of the sun's rays, transformed into pearls. Pliny and Dioscorides believed that pearls were productions of dew; but that observant old Elizabethan navigator, Sir Richard Hawkins, shrewdly remarked that 'this must be some old philosopher's conceit, for it cannot be made probable how the dew should come into the oyster.'

Modern writers suggest various causes for the intrusion of the nucleus round which the pearl is formed. The free border of mantle lining each

valve of the shell dips downwards to meet a similar edge on the opposite side, thus forming a double-fringed veil. The tentacles of this fringe consist of long and short flat filaments, which are exceedingly sensitive, so that even the approach of a foreign substance makes them draw forwards and shut out the intruder. They doubtless prevent the pearls from dropping out of the shell, and preserve the fish from the host of carnivorous creatures which infest its place of abode; and if it be true that particles of sand form the nuclei of pearls, they must run the gauntlet of these ever-watchful sentinels before they can intrude themselves amongst the interstices of the mantle. The food of pearl-oysters consists of foraminifera, minute algae, and diatoms; and Dr. Kelaart has suggested that the silicious internal skeletons of these microscopic diatoms may possibly permeate the coats of the mantle, and become nuclei of pearls.

It is suggested that pearls are produced when the transparent envelope of the animal, called the mantle, is wounded or irritated. That small boring worms pierce the shell and penetrate to the body of the animal. The mantle then sends forth a quantity of pearly matter over the wounded spot, and this becomes a little knob or pearl. This is supported by the fact that nearly all the shells in which pearls are found are outwardly contorted, and that a smooth regular shell is a pretty sure sign of the absence of the pearl.

The Chinese are said to thread upon fine silk, small beads of mother-of-pearl, and fasten them within shells of pearl oysters when they rise to the surface of the water at the beginning of summer. The animals are then restored to their bed, where they soon cover the beads with calcareous matter, and thus convert them into pearls. Small figures of Buddha are the stock subjects introduced, and these are highly valued by Buddhists in all countries. Small pearls which have been immersed in acetic acids, and thus reduced to their membranous constituents, have the appearance of being formed of concentric coats of membrane and carbonate of lime, thus resembling in composition the mother-of-pearl with which oyster-shells are lined. Mr. Robert Garner, F.L.S., particularly examined those formed in the mantle of the Conway and Lancashire salt-water mussel; and he attributes the same origin to all pearls, the oxidation of a minute species of diatoms causing their formation, much in the same way that galls are formed in plants.

Sections of pearls show very fine concentric laminae surrounding a grain of sand or other extraneous matter. The nacreous lustre has been attributed to the diffraction of light from the outcropping edges of the laminae; but Dr. Carpenter says it may result from the minute plication of a single lamina.

In whatever way produced, pearls of considerable size, on account of their beauty and rarity, have been valued at enormous prices in past ages, and are still among the choicest objects of the jeweller's art. Their delicate and silvery lustre has been as widely celebrated as the brilliance of the diamond. The *Meleagrina margaritifera* furnishes the finest pearls and finest nacre. When secreted in the globular form, it is the pearl; on the inner walls of the shell, it is the nacre.

A pearl, to be pure, should be of perfect white-

PEARL.

ness, bespherical or of a regular pear shape; those of blue reflection are less valued, and the yellow pearls still less. Tavernier was of opinion that the yellow colour was a stain from the rotting mollusc.

The pearl mollusc multiplies by means of what is technically called spat or spawn, which is thrown out in some years in great quantities,—perhaps similar to the edible oyster of Britain, which threw much spat in 1849, and not again until 1860, and not then up at least to 1866. The spat floats in and on the water, and attaches itself to anything it comes in contact with, attaining, it is said, the size of a shilling in six months. In its seventh year the pearl mussel attains its maturity as a pearl producer; pearls obtained from a seven-year mussel being of double the value of those from one of six years of age. In mussels under four years the pearls are not of any mercantile value, and after seven years the pearls deteriorate. Those from mussels of about four years old have a yellow tinge, and the older kinds a pinky hue; but pearls of a red and even black, as also with other colours, are likewise met with. Of all the substances used for personal decoration, the pearl alone derives nothing from art. The Baghdad dealers prefer the round white pearl. Those of Bombay esteem pearls of a yellow hue and perfect sphericity. According to European taste, a perfect pearl should be round or drop-shaped, of a pure white, slightly transparent, free from specks, spots, or blemish, and possess the peculiar lustre characteristic of the gem. In India and China, the bright yellow colour is preferred. The rose-tinted pearl of Scotland is in large esteem amongst Paris ladies. The pearls of Scotland of the best kind range in price from £5 to £50, but £100 has been paid for a fine specimen. Pearls of the Persian Gulf and Ceylon realize from Rs. 1000 to Rs. 1500 a tola of 180 grains.

A pair of very fine black pearls was recently sold to a rich iron merchant in Paris for 500,000 francs. The pink pearl ranks with the clear white pearl in value. Some specimens have been found with purple, cream, and salmon colours.

Pearls are designated in Europe by their colours, white, yellow, or black; or by their size, as seed-pearl. The best pearls are of a clear, bright whiteness, free from spots or stains, with the surface naturally smooth and glossy. Those of a round form are preferred, but the larger pear-shaped ones are esteemed for ear-rings. Seed-pearls are those of the smallest size.

The dealers in Ceylon recognise twelve classes, in none of which is the actual weight taken into consideration—

1. Called Ani, comprising those pearls to which Pliny first applied the term 'unio,' in which all the highest perfections of lustre and sphericity are centred;
2. Anathari are such as fail a little in one point, either in lustre or sphericity;
3. Sanadayum, and 4. Kayeral, such as fail in both;
5. Massagu, or confusion;
6. Vadvu, beauty;
7. Medangu, bent or 'folded' pearls;
8. Kurwal, double pearls;
9. Kalippu, signifying abundance;
10. Poesal, and 11. Kural, mis-shapen. These find a ready sale in India, all kinds and shapes being indiscriminately used to adorn the roughly made breastplates of gold worn by women of high caste.
12. Thool, literally 'powder.' These are all

PEARL.

easily disposed of in India, where they are sometimes made into lime to chew with betle.

Pearls are found in the Unio marginalis, Lam., and Unio flavidus, Benson, of the Bhandardah lake near Berhampore.

In the salt-water inlets along the entire seacoast of Sind, a thin-shelled variety of the oyster occurs; on the sandbanks, called Kenjur, that are left dry at low tides, but chiefly in the creeks near Kurachee, a seed-pearl is found, selling at Rs. 15 the tola. The seed-pearl fishery was let by the Amirs successively for Rs. 650, Rs. 1300, and Rs. 19,000. After 1839, they let them out for Rs. 1100, Rs. 21,000, and Rs. 35,000, but the contractors failed.

The produce of the fisheries in the Gulf of Manaar has varied greatly at long intervals. From 1838 to 1854 there was no fishery at all. A similar interruption had been experienced between 1820 and 1828. The Dutch had no fishery for 27 years, from 1768 to 1796; and they were equally unsuccessful from 1732 to 1746. It has now been satisfactorily proved that the pearl-oyster's occasional disappearance is perfectly natural. The Arabs of the Persian Gulf, according to Colonel Pelly, attribute the decay of the Sind and Ceylon fisheries to the mixture of mud and earthy substance with the sand of the beds.

In the Persian Gulf the pearl banks extend 300 miles in a straight line, and the best beds are level and of white sand, overlying the coral in clear water; and any mixture of mud or earthy substance with the sand is considered to be detrimental to the pearl mollusc. These banks are from 3 to 6 miles off shore, in 6 to 7 fathoms water. 400 boats of all sizes are annually employed, carrying crews of from 13 to 25 persons, half of them divers. The yearly produce was estimated at 40,000 toman, each toman 18 piastres Rumi.—the masters drawing three shares, divers two shares, and assistants one share. Some of the Arab colonies on the Persian littoral retain a right to fish on the banks, which are appanages of the parent Arabian tribe.

In the Persian Gulf there is both a spring and a summer fishery, and as many as 5000 boats will assemble from Bahrein and the islands, and continue fishing from April to September. The total amount derived in the pearl fisheries of the Persian Gulf has been estimated at £400,000, employing about 30,000 persons. During a recent year, 30 divers engaged in the pearl fishery in the Persian Gulf lost their lives, most of them being victims of sea monsters. The value of the pearls taken in 1879 in the Persian Gulf was set down at about £300,000. There were 7,000,000 fished, and it was believed that but for the frequent interruption by weather, 2,000,000 more might have been lifted.

Off the coast of Ceylon the fishing season is inaugurated by numerous ceremonies, and the fleet, sometimes of 150 boats, then puts to sea. Each boat has a stage at its side, and is manned by ten rowers, ten divers, a steersman, and a shark charmer (Pillal karras). The men go down five at a time, each expediting his descent by means of a stone 20 to 25 lbs. in weight, and, holding their nostrils, gather into a net or basket about 100 shells in the minute or so which they remain under water. Each man makes 40 to 50 descents daily. The pearl-oysters are thrown on the beach

and left to putrefy. It has been ascertained that no diving apparatus could, with any advantage, be substituted. The common time for remaining under water is 50 or 60 seconds, but Sir Henry Ward timed one man at 80 seconds, and another at 84 seconds. When the oysters reach the Government kottus, they are divided into four heaps. The divers then remove their share, and the remaining three-fourths, belonging to Government, divided into heaps of 1000 each, are sold by auction to the highest bidder. Sir Henry Ward says,—I have seen myself 32 pearls taken out of one oyster, three of which were worth £1 a piece, while even the smallest had a marketable value.

The Ceylon receipts have been £1,117,992, viz:—

1796 to 1809, . . . £517,481	1856 to 1863, . . . £168,470
1814 to 1820, . . . 89,909	1874 to 1881, . . . 155,000
1828 to 1837, . . . 227,132	

The revenue derived from this source is of a very uncertain and precarious nature.

1855, . . . £10,922	1	0	1859, . . . £48,215	18	10
1857, . . . 20,363	6	0	1880, . . . 20,015	0	0
1858, . . . 24,120	0	2	1881, . . . 59,953	0	0

Pearl banks dot the coast from the sandy island of Rameswaram southwards to the mouth of the Tambraparni river.

In 1881, about 27 millions of oysters were fished, which were sold for an average of Rs. 33 per 1000, about 3000 men being employed at the work.

About the year 1794, the Madras Government undertook the management of the pearl fisheries on the S.E. coast of the Peninsula, and in the 83 years realized about 12 lakhs of rupees, their annual expenditure being about Rs. 6000.

In the Aru Islands on the coast of New Guinea, the great sources of wealth are the pearl and trepang banks, which lie on the eastern side of the group, and are often several miles in width, being intersected by deep channels, some of which will admit vessels of burden.

The pearl fisheries in Western Australia are yearly becoming more valuable to the colony. In 1875 the value of pearls and pearl shells exported was £65,000; in 1876, £74,143. Some £30,000 worth of pearl shells also were fished up from Champior and Nicholl bays last year, and shipped to Europe for manufacture into buttons, knife-handles, &c. Some valuable pearls are also being discovered in the oysters. One was recently sold at Perth for £215; and another, worn in a scarf-ring, worth nearly as much, being as big as a small nut. Three years before, a pearl valued at £1500 was fished up. Sharks' Bay, in the 25th degree of south latitude, is the locality where the best pearls are found; it is here where the *Avicula margaritifera* has made a home. A good many Malays, imported from the Dutch islands in the Eastern Archipelago, are engaged in pearl-fishing, but the best divers are the natives of Australia.

Eleven firms are engaged in the trade in Torres Straits, of whom ten have their headquarters at Sydney, employing nearly 100 boats in the work. The imports of pearl shell into N. S. Wales from Queensland and Torres Straits ranged from £2500 in 1871 to £62,468 in 1878. The amount of pearl shell exported in 1878 was 449½ tons, valued at from £60 000 to £70,000. The price of the shell ranges between £120 and £280 per ton. The divers principally consist of Kanaka, Maori, and Malay, only some 20 white men being engaged in the operations, with a few Australian blacks: the

divers' earnings seldom being less than £260 a year, while in very good years, such as 1878, they have been known to make £340 each. Although there are a good number of sharks in these seas, the loss of life on the part of the pearl fishers is very small, averaging about two per annum; and it is a curious fact that the sharks almost always disappear as soon as the fishing operations commence.

Captain Moresby says that pearl shell fishing near the islands of Torres Straits is carried on by Europeans, who engage divers from the Loyalty, Solomon, and New Hebrides groups. Large open boats are employed, each with eight or ten divers. The pearl shell sells at Sydney at £150 to £180 per ton. The divers go down in 4 and 6 fathoms water. The mollusc cannot be the *Meleagrina*, for he says it weighs from 3 to 10 lbs.; the divers bring up one under each arm. The pearls, he says, are few, small, and of poor quality, and become the property of the divers. The mollusc is eaten.

Two thousand years ago, the Romans found pearls in Britain; and in modern times the rivers of Scotland have afforded considerable quantities, though not of the best quality. Several rivers of Saxony, Silesia, Bavaria, and Bohemia afford pearls, and they are also found in two or three Russian provinces. The coast of Columbia and the Bay of Panama have furnished considerable quantities, but they are not considered equal to the pearls of the east in shape or colour. Pearls to the amount of £500,000 are annually brought to Canton; coral is also a part of cargoes from the Archipelago to China.

The larger pearls are considered the more valuable. Cleopatra is said to have dissolved in vinegar a pearl of the value of 150,000 aureos or golden crowns, in the presence of Anthony, and to have drunk it off; but it would have required a larger quantity and stronger acid than any one could have taken with impunity to have done so. Caesar is said to have paid a sum equal to £50,000 sterling for a single pearl. The felloe drop to the pendant destroyed by Cleopatra is said to have been sawn in two by command of the Emperor Augustus, and used to adorn the statue of Venus.

Tavernier mentions one which an Arab had found in the Parages de Catifa, which the king of Persia purchased in 1633 for £51,000. A pearl from Panama, called *Peregrina*, bought by Philip II. of Spain, weighed 134 carats. It was pear-shaped, of the size of a pigeon's egg; it was valued at 50,000 ducats. Another, sold by Garuckes? de Calais to Philip IV. of Spain, weighed 126 carats. When the crown jewels of France were examined in 1789, the value of the pearls was estimated at £40,000. Amongst them were, one of 27½ carats, valued at £8000; two of 57½ carats, valued at £12,000; two of 99½ carats, estimated at £2580. France has a magnificent pearl, brought from Berlin by Napoleon. Mr. Hope's pearl, said to be the largest known, measures 2 inches long, 4 inches round, and weighs 1800 grains. One taken from India in 1660, and now in the possession of Princess Youssofopoff, weighs 126 carats, and is valued at £16,000.

When the Princess Royal married the king of Prussia's son, she had, amongst other articles, a necklace of 32 pearls. They are said not to have been all of the first kind, nevertheless its cost was estimated at £20,000.

PEARL, ARTIFICIAL.

The prices of the smaller-sized pearls, like those of the smaller-sized diamonds, are rapidly increasing. A pearl of 3 grains will cost about £1; a pearl of 30 grains, £110. The Imam of Muscat has one worth £32,000. A few years ago, a pearl was sold in London for £2600, which weighed 116 grains; and in 1878 another of 114 grains was sold. These two were purchased by Baroness Alphonse Rothschild.—*Faulkner; Pliny's Nat. Hist.* lib. xxxii. ch. 31; *Tennant's Ceylon*, p. 371; *Walton's Discourse*, p. 70; *Forrest's New Guinea*, p. 43; *Rumph.* tab. 47; *Da Costa, Conchylii*, vii. p. 4; *Chemnitz*, vii. ix. p. 495; *Gmelin; Linn. Syst.* p. 3300; *Bonani*, i. pp. 83, 84; *Argenville*, p. 23; *Dampier's Voyage to New Britain*, in *Harris*, i. p. 124; *quoted in St. John's Indian Archipelago*, i. p. 137; *Woodward's Fossil Shells*; *E. Gray in Annals of Philosophy*, Nov. 1825; *Jameson's Ed. Journ.* 1826, p. 199; *Rebeyro's Ceylon*; *Moresby*, p. 31; *Intellectual Observer*; *Woodward*.

PEARL, ARTIFICIAL. These are largely made in China, for domestic use and for export; also largely in France from the scales of the small fish called ablette or bleak (*Cyprinus alburnus*). These fishy particles can be kept for a long time in solution of ammonia, and this enables the manufacturers of artificial pearls to carry on a considerable traffic with distant places where the fish is plentiful, the supply from the Seine, though abundant, being insufficient for the purposes of the trade of Paris. Slender tubes of glass are prepared, called girasols; the pearl essence is then mixed with a solution of isinglass, and is blown while hot into each bead by means of a fine glass pipe. The solution is spread equally over the whole internal surface, by shaking the pearls in a vessel placed over the table where the workman sits, and to which he gives motion by his foot. When the varnish is equally diffused and dry, the beads are filled with white wax; this gives them the necessary weight and solidity, and renders them less fragile. They are then bored with a needle, and threaded on strings for sale. The holes in the finer sort are lined with thin paper, that the thread may not adhere to the wax. To produce one pound of scales 4000 fishes are required; but this quantity of scales only yields 1 ounce of pearl essence. The fishes are about 4 inches long; they are sold at a cheap rate in the markets after being deprived of their scales. The value of a pound of washed scales in the Chalonais is from 15 to 25 livres.

PEARL ASH. Kien-sha, CHIN. The term is applied to calcined potash. It has a spongy texture, and a whitish pearly lustre. Pearl-ash can be prepared from nitre and charcoal.

PEARL-BARLEY. P'mi, CHIN. Husked barley. The seeds rounded, and all the outer coat removed.

PEARL, MOTHER OF.

Mère-perle, . . . FR. Indong mutiara, MALAY.
Sadf, . . . HIND. Gohur parwar, . . . PERS.
Madro perla, . . . IT. SP. Sipi mutlu, . . . TAM.

Mother-of-pearl used to be sold by the Labbai stone merchants, cut into beads and other ornaments, which at first they called Surat Munnie, owing to their being brought from Surat. The beautiful lining of shells known as mother-of-pearl is manufactured into articles of great beauty. Pearl substance is dissimilar from nacre,

PEDALIM MUREX.

and all attempts to make pearl from nacre have failed. The layers of the pearl are concentric, but the nacre is in straight lines; also nacre is harder.

PEARL-OYSTER. The *Meleagrina margaritifera* is not, however, an oyster proper, but a genus of the Aviculidæ or wing-shell family of molluscs. The pearl-oysters are less oblique than the other aviculæ, and their valves are flatter and nearly equal. They are found in about 12 fathoms water at Madagascar, Ceylon, the Persian Gulf, Swan River, Panama. Seed-pearl is a name given to the small-sized pearls, called in China Yang-chu.

PEARL SAGO, granulated sago meal, sago.

PEARLY NAUTILUS, *Nautilus pompilius*. Like all cephalopods, it swims backwards. It lives at great depths, down to 200 fathoms.

PEAT is composed chiefly of the decayed fibres of mosses, and is used as fuel. Dr. Falconer obtained very modern peat out of the banks of the Hoogly, a few feet below the surface of the soil, in which were seeds of the *Euryale ferox*. Peat is generally distributed on the Neilgherries over the entire range of the hill tract. The plants producing Neilgherry peat are different from those of Europe. Large peat bogs occur on the Kundsah, and run as far east as Jakatallah or Wellington. Good peat has been found in the Mid Himalayas at the Sach pass, resembling Irish turf in its character, and in the genera of producing plants. Dr. Angus Smith largely recommended the use of the peat in the Panjab.—*Faulkner; Hooker's Jour.* ii. p. 341; *Cleghorn's Forests of S. India; Cleghorn, P. Rep.*

PEBBLES, the silicious minerals of Cambay, are sold in Europe and America. Scotch, Irish, Chamouni, Niagara, and Isle of Wight pebbles are so called, according to the locality whence brought.

PECHA, HIND. A scarf worn by Lahouli women.

PECHAK, HIND. A reel for gold thread.

PE-CHI-LI, a province of China, the principal length of which extends from 38° to 40½° N. It is bounded by Chinese Tartary on the N., by Ho-nan on the S.W., by the Imperial Sea and Shan-tung on the E., and by Shan-si on the W. Peking, the capital of the empire, is situate in this province, together with 9 other cities of the first class, 40 of the second class, and 180 of the third class. The Gulf of Pe-chi-li has been surveyed. The tide, being retarded by islands, rises only about 10 feet, but the greater part of the land being only about 3 feet above high-water mark, and there being but few mountains, the rivers are navigable for a considerable distance, notwithstanding their comparatively small size, and in the rainy season they frequently overflow the country. The river Pei-ho experiences a tidal rise 100 miles inland from the bay; it flows through a completely level country, the soil of which is composed of light sand and micaceous particles, blended together with portions of clay and vegetable mould, without a single rock, stone, pebble, or gravel of any kind.—*Sir's China*, i. p. 410.

PECHWAN, HIND. A hookah with a long twisted pipe.

PEDALIM MUREX. Linn.

Khussuke kadir, . . . ARAB. Kaka mulu, . . . TAM.
Gokaru, . . . HIND. Ani-neringi, . . .
Gheja suda-moostra, SANS. Yenuga-palleru, . . . TEL.
Eet-neringi, . . . SINGH.

A succulent, pretty large ramous annual, with small yellow flowers, which appear in the rains. It grows generally over all India, but chiefly on the Coromandel coast, in a moist sandy soil; flowers in the rainy and cold seasons. The fresh plant renders water or milk very mucilaginous, without altering the taste, colour, or smell of the liquid. This thickening disappears in a few hours. Butter-milk is often fraudulently thickened by the use of the leaf; the plant is a good mucilaginous demulcent, much used by the natives as a drink in gonorrhoea, and is useful as a diuretic in urinary diseases. It is considered cool and tonic.—*Riddell; Ains.; Roxb.; O'Sh.; Powell.*

PEDANG. JAV. A kris of Java.

PEDARI, in Hinduism, a fierce Gramma-deva.

PEDDA. TEL. Great. Pedda manushulu, great persons. Chinna peddalu, great and small.

PEDILANTHUS TITHYMALOIDES, the Jew bush of the W. Indies, now common everywhere about Calcutta in hedges. A shrub about 6 feet high, abounding in white bitter milk, known and used in America and W. Indies as ipecacuanha; but in numerous trials no proof was obtained of its efficacy.—*O'Sh. p. 566; Mason.*

PEDIR coast on the north part of Sumatra, extends from Point Pedro 40 leagues to Diamond Point. Pedir Point, or Batoo-Pedir, is in lat. 5° 31' N., and long. 95° 52½' E.—*Horsb.*

PEDRA BRANCA, or White Rock, in lat. 1° 19' N., and long. 104° 25½' E., lies in the middle of the entrance of the Straits of Singapore, 7½ miles west from the east peak of Pulo Aor, on which is erected the Horsburgh lighthouse, lighted 15th October 1851. The tides near it are very irregular in time, velocity, and direction.—*Horsb.*

PEDRA BRANCA, or Tysing-Cham, a rock on the south coast of China, in lat. 22° 18½' N., and long. 115° 73' E., 49 miles eastward of Lema Island.—*Horsb.*

PEDRONS, a colonel in Sindia's army, who served under Perron. He raised and commanded the 3d Brigade, and was in command of Alighur, and was taken prisoner when Lord Lake stormed and took it.

PEDRO-TALLA-GALLA, the highest peak in the mountains of Ceylon, 8280 feet above the sea.

PEENASH. HIND. ? A disease which occurs in man in the north-west of India, caused by the larva of an insect taking up its abode in the cribriform plate of the ethmoid bone. The larva is small, articulated, and terminates in a spiral tail. The mouth and eyes are very distinct.—*Taruk Chandar Lahori; Moquin Tandon.*

PEEPSA, a troublesome dipterous insect, very small and black, which floats like a speck before the eye. Its bite leaves a small spot of extravasated blood under the cuticle, very irritating if not opened.—*J. B. As. Soc. No. xxxix. p. 426.* See Insect.

PEGANUM HARMALA. *Linn.* Syrian rue.
 Hurmaro, . . . DUKH. | Islam lahori, . . . HIND.
 Harmal, Isband, . . . HIND. | Spelane, . . . TR.-INDUS.
 Harhar, . . . ? | Harmala ruta, . . . ?

This plant occurs in many parts of India, on waste, broken ground. The seeds are used in native medicine, and called Lahori Hurmul. In the Makhzan-ul-Adwiah, the seed is called Moolie. It is the same as the *xyracor* of Dioscorides. *P. harmala* and *Lactuca virosa* are both said to possess narcotic properties like opium.

The seeds were at one time imported into England. It is principally used as a fumigatory agent to avert evil influences. The plant is considered proper only for sweepers, and not to be touched by Sikhs or Hindus, but the seeds are burned on a fire if any person enter a room who may have any discharge which could render him unclean.—*Hook. and Th. Fl. Ind. pp. 83, 115; Powell, i. pp. 295, 355, 452; Royle, p. 155; O'Sh. p. 260.*

PEGASUS, a genus of fishes of the section Syngnathidae. One of the species is known as the flying horse; the flying fish and flying gurnard are other flying fish. *P. natans*, *Linn.*, 3 inches long, a small fish with two largish fins near the head. *P. draconis*, *Linn.*, 3 inches long, dark coloured, with two very large fins near the head.

PEGU. TIB. The yak cow; small, like the cow of Bengal, hair long. Sauh, cross between cow and yak. Sauh Yak, produce of cow by yak bull. Ba Sauh, produce of female yak by bull. These are great milkers, better than yak or cow; tail, half-cow, half-yak. Females give young with bulls or yaks, best produce with yaks. Elevation of shoulder less than in the yak. Hair long, but less so than the yak.

PEGU or **Pai-gu**, an administrative division of the province of British Burma. Area, 9159 square miles; population (1881), 2,323,512. Pegu, its chief town, was captured 3d June 1852, and Pegu district was annexed by proclamation on 20th December 1852. Pegu has four great mountain ranges: the range separating Arakan from Pegu is about 4000 feet high; the range separating the valley of the Irawadi from that of the Sitang, about 2000 feet high; the Martaban and Tenasserim ranges, about 5000 feet; and the fourth or most eastern separates the Sitang and Salwin rivers, and extends into the large and compact mountain group of Younzallen to the south-east of Toungthoo. The area of this lofty region is about 100 square miles, and several peaks rise to 7000 and 8000 feet. The inhabitants consist principally of Burmans, Talaing or Mon, Karen, Karen-nee or Red Karen; Khyin, whose women tattoo their faces; the Yeh-baing of the Yoma range and the Shan, who form separate communities. Pegu is described by European travellers in the 16th century as of great size, strength, and magnificence. Cæsar Frederick was here in the latter portion of the 16th century. When Aloung-lhura overran and conquered Pegu in the middle of the 18th century, he used every effort to annihilate all traces of Talaing nationality. He destroyed every house in the town, and dispersed the inhabitants.

The Pegu or Zamayee valley lies to the east of Phoungye, from which it is separated by another branch of the Yoma. This valley is enclosed on all sides by hills; it is about 40 or 50 miles in length from S.E. to N.N.W., which is the direction in which it lies, and 20 miles in breadth from E. to W. The Zamayee river is large, and navigable for small craft in the rains for a distance of 60 or 80 miles above Pegu, to the extremity of the valley; and although only about knee-deep in the dry season, it rises 40 feet in the rains. The mountains extending along the N.W. side of the valley, separating it from Phoungye, the Hlaine, and Tharawaddy, are of considerable extent and elevation, and form a part of the Yoma range. On the E. side it is separated from

the plains of Tounghoo and Shoay-gyeen by a lower branch of the same chain, and finally it is enclosed on the S. by a low hilly tract, through which the river passes by a series of small defiles to Pegu. The rains pour down at the rate of 150 inches in the course of a monsoon, and the rivers rise 30 to 40 feet. The silting up of the alluvial deposit at the mouth of the Pyne-Choung creek is doubtless due to this cause. If native tradition is correct, 2000 years ago the sea washed within 8 or 10 miles of the old royal city of Pegu.—*Dr. McClelland, in Selec. Records, Govt. of India, Foreign Dept. No. ix. p. 8; Imp. Gaz. vii.*

PEH. CHIN. White. Peh-chi, Iris florentina. The root is a favourite cosmetic with the ladies of China. Peh-fen, white lead. Peh-kiang, Zingiber officinale. Peh-kih, a Zingiberaceous rhizome obtained in China, in Shan-si, Kwei-Chau, Kiangnan, used in hæmoptysis, phthisis, and other ailments.—*Smith.*

PEH-HO, written Pei-ho, the White River of China. Below Pekin it and the Sha-ho river join, and the united streams bear the name of Pe-ho, and disembogue into the Gulf of Pe-chi-li.—*Yule, Cathay, ii. p. 259.*

PEH-LAH. CHIN. Insect-wax, a product of the province of Sze-chuen, where the tree on which it feeds, the Peh-lah shrub, flourishes; but though the insect thrives there, it is found necessary to keep up the supply of insects by the constant importation of eggs from beyond the western frontier of the province. The insect is about an inch in length, and of pale-grey colour, and one insect exudes an ounce of wax in the season, of the summer months. The insect is not affected by rain, but when the leaves fall it dies. The wax is then collected and melted in a cloth over boiling water. It is pure white. On the largest cakes in Hankow is often observed written, 'It mocks the frost and rivals the snow.' The price was 40 dollars a pikul, or about 15d. a pound. The vegetable tallow of which candles are usually made melts with great facility; in order, therefore, to prevent them from running, they are coated with a thin crust of finest insect wax, which is extremely hard, and slow to melt, so that it retains the vegetable tallow in a liquid state, and is a clean and economical ingredient.—*Oliphant, p. 405.*

PEHLAVI, an ancient language used in the time of Ardeshir, now called Huzvarish. It was the ancient language of the Persians prior to the Muhammadan conquest by the Khalifa, in A.D. 636. See Pahlavi.

PEH-TIEH. CHIN. A textile fibre from the country of the Uigur.

PEH-TUN-TSZE, also Tun. CHIN. This is a quartzose mineral used by the Chinese in making porcelain.

PEI, or Pey, or Pe, also Pisacha. TAM. A demon. Though Pey and Pisacha are to a certain extent interchangeable, yet people who are skilled in diabolical refinements draw a distinction between them. Pey, they say, means the ghost of a human being that has become powerful and malignant. It has a name and a place of residence, and is systematically worshipped. The Pisacha, on the other hand, they say, has no home, or name, or worship. The Bhuta, they add, is a demon of a higher order, an attendant on the Brahmanical demon-gods. It is likewise

worthily of notice that Pey has meanings which Pisacha has not. In combination with names of plants, Pey means wild, uncultivated, useless for human food; in combination with names of animals, it means insane. The use of a word in combination often throws light on its original meaning. It is possible that this application to plants and animals may be only a metaphorical transfer of the older meaning of 'devil.' Still, in either case, the direct derivation of Pey from Pisacha, a word which is never used in this way, may be regarded as improbable. Pei-puja, devil worship, still prevails in Tinnevely. When the Brahmans in A.D. 1800 (?) introduced the worship of Vishnu into Southern India, they abolished the demon worship as far as their power extended.—*Garrett.*

PEIN-GO. BURM. A boat on the Burmese rivers. See Boat.

PEI-TAN. CHIN. The altar of the earth.

PEKEA, a genus of plants inhabiting Guiana, of the genus Caryocar of modern botanists, and which might advantageously be introduced into India. Caryocar nuciferum bears the Suwarrow or Saouari nuts of commerce. The fruit is in form like an egg, covered with a thick rough brown rind, beneath which is a soft greenish buttery substance. The nut has a stinging surface, and contains a very excellent kernel, from which may be extracted an oil like that from sweet almonds.

P. butyrosa is a large tree with a trunk 80 feet high, and 3 feet in diameter. The berries are covered by a rind 2 or 3 lines thick, and consisting internally of a buttery yellow substance, which melts between the fingers, and which is sometimes used in cooking instead of animal butter. Under the rind lies a stone covered all over with slender stings, which easily separate, and become very troublesome to those who open the stones; within is a kidney-shaped kernel covered with a brownish membrane, and very good to eat; it is commonly served at table. It is called Pekea by the blacks in the neighbourhood of Oyapoco in French Guiana, where it is much cultivated.

P. tuberculosa, Aublet, the Caryocar tomentosum of modern botanists, is a very large tree inhabiting the woods of Guiana, where it is called Tatayouba by the Garipou Indians. The fruit consists of greenish compressed drupes, which adhere around a common centre, and contain a single seed of large size, covered with a brownish rugged woody shell, and enclosing a kernel of a soft consistence, and of the most delicate buttery quality. It is much superior to English walnuts, almonds, and filberts. Differs in having no stings upon the surface of the stone of its fruits.

PEKING or Pekin, in lat. 39° 54' N., long. 116° 32' E., lies north-west from the entrance of the Pei-ho river, about 114 or 120 miles inward. Pekin means court of the north, and Nankin court of the south, both of them large towns.

Pekin is the present capital of China. It bore the name of Yew-chau, from the Hun dynasty B.C. 202 to the Wu-tai A.D. 950, through five kingdoms or principdoms. During the Liao dynasty, A.D. 1000, it was called Nan-king, because the northern capital was beyond the great wall; but the Hun dynasty called it Pe-king, or northern place, and the Ming dynasty called it Hung-wu. In B.C. 1111, Wan-wang of the Chau dynasty gave his

brother the title of Prince of Yen, who built a city called Yen-king, and the ornamental marblework of this old city forms the foundation-stones of the western portion of the walls of the present city of Peking. About A.D. 1200, Chengiz Khan took Yen-king, and after him his son Oktai put an end to the Kin dynasty. In 1267, Kachilai Khan, nephew of Oktai, and grandson of Chengiz Khan, destroyed Yen-king, and a little to the north-east of its site built another city, called Tatu, or King-ching, or Shun-teen-fu, now called Peking. This is the Kambalu, the city of the Kablai Khan of Marco Polo. The Mongol dynasty subsequently ruled from Peking from A.D. 1280 to 1368, but in 1369 was succeeded by Hung-wu of the King dynasty, who removed the court to Nan-king, where it remained till Yung-lo, the third of the Ming, embellished Peking, and in A.D. 1410 made it his capital, since which time it has continued to be the capital, the centre of all the administrations.

Peking resembles an immense village. It is situated in a large plain, but, from the peculiar formation of the land, it is not to be seen from a distance. The wall is of a considerable height, 35 to 40 feet, and surrounded by a canal which communicates with the Pei-ho, so that a portion of the supplies intended for the capital can reach Peking in very light boats. Peking consists of two cities, separated by a wall, — the Manchu city, Zein-tchau, and the Chinese city, Wai-lo-tchau. In the centre of the former, surrounded by a wall, is the Imperial quarter, Nouan-chau, composed exclusively of buildings set apart for the emperor and his suite, whose roofs, covered with yellow tiles, glitter in the sun's rays like burnished gold. All these edifices, kiosks, and temples are surrounded by gardens, ornamented with lakes and artificial rockwork. In the Manchu city, not far from the Imperial quarter, are the different departments of government for the Manchu employees. To the east of the Manchu city is the hall of examination, similar to the one at Canton, but more spacious. The Chinese city consists mostly of shops. The temples of Heaven and Agriculture are at the south of the city. These are large establishments (surrounded by walls), comprising several buildings in themselves.

The most remarkable spot near Peking is the Hai Dian, the residence of the Bagdohan, his majesty the emperor, situated about seven miles west of the city. The emperor only appears in the capital on occasions of great festivals or sacrifices. The grounds around the palace are laid out in vast gardens. Still farther to the west lie a range of mountains whose summits are crowned with temples more or less picturesque.

At Peking, the temple of the Great Dragon, a circular pyramid, and a Buddhist monastery, the pagoda, and a pavilion in the summer palace, and the Tung Cheu pagoda, all merit notice.

The Tartar city, officially Nei-chhing or Inner town, encloses a second, called Hoang-chhing or Imperial (yellow) town, which no doubt represents the outer palace of Odoric's day, and that includes a third, called Fseu-kin-chhing or Red City, which is the actual residence. The Green Mount, to which Kablai caused remarkable trees of every bulk to be transferred, still stands conspicuous within the palace walls. It is called by the Chinese King-shan, Court Mountain, Wan-su-

shan, 'Ten thousand years Mount or Meishan, Coal Hill, the last from the material of which it is traditionally said to be composed, as a reserve store in case of siege. It rises 160 feet above the natural soil, and on it the last Ming emperor met a miserable end. The lake also (called Thai-i-ohi) still exists as a swampy hollow, and the Beautiful Bridge is there in decay. In the Peking or court pronunciation, the Sheng differ materially from those in the Canton and Fu-chien dialects. In the court pronunciation, only four Sheng are heard: in the Nankin, five; and in the Canton and Fu-chien, seven or eight. The Sheng are produced solely by the sinking, rising, or non-alternation of the sound. The Peking dialect holds the same place in China that the London English, as spoken by the educated classes, does in Britain. When the missionaries of the Society of Jesus made their way in the 17th century to Peking, and startled the wise men of the Celestial Empire by their superior knowledge, they found in the eastern part of the city, on the rampart or wall surrounding it, an astronomical observatory, furnished with several old instruments. Father Verbiest so gained the confidence of the Emperor, by repeatedly calculating beforehand the exact length of the shadow which a gnomon would throw at noon, that he was authorized to have six new large instruments made. An account of these he published in 1687. To the old instruments, which had to be removed to make room for his own, he seems to have paid little attention. These instruments, as well as those erected by Verbiest, are, however, even still in existence. Verbiest's instruments, sextant, quadrant, azimuth circle, zodiacal armillary sphere, etc., were copies of the astronomical instruments devised and constructed by Tycho Brahe; but besides these were the two large instruments which had been made during the Yuen dynasty, and four large instruments are said to have been constructed A.D. 1279. In this year, Kablai Khan, the great Mongol monarch, finished the conquest of China, and moved his residence to the new city Taydo, now Peking. This monarch favoured the arts and sciences, and he supported and protected the astronomer Ko Show-King. There are found, thus, in the 13th century, the equatorial armillæ of Tycho Brahe, and an equatorial instrument quite like those with which Tycho observed the comet of 1585. These instruments of Ko Show-King were examined in one of the first years of the 17th century by the Jesuit Matteo Ricci; and in Colonel Yule's translation of *The Book of Ser Marco Polo*, they are described at length. By them it is proved that the Chinese astronomers anticipated some of the ideas of the great Danish astronomer some three centuries before his time. — *Swinhoe, N. China Campaign*; *Polo*, i. p. 10; *Exped. de Chine, par P. Varin*, 1862; *Davis*, ii. p. 75; *Timkowski*, ii. p. 154; *Panthier, Chine Moderne*, p. 19, quoted in *Yule, Cathay; Meadows' Desultory Notes*.

PELAN, a very hard, fine, close-grained wood of Ceylon.

PELARGONIUM, a genus of plants usually called geraniums. Many species thrive well in India, and are easily raised from seed. The horse-shoe and oak-leaf bear flowers abundantly, but it is generally remarked that plants grown from English seed do not blossom. Many of the

species thrive well when put out in the garden, but are better for being grown in large pots, and if so placed as only to receive the morning and evening sun, will blossom most abundantly. The tubers of *Pelargonium triste* are eaten at the Cape of Good Hope. *Pelargonium odoratissimum*, *Aiton*, a perennial trailing herb of S. Asia, yields by distillation a fragrant oil from its leaves. — *Von Mueller*; *Riddell*.

PELASGI, ancient races whose language and civilisation are supposed to have been the prototypes of Hellenism and Ionianism. Ptolemy derives this term from Pelasa, the ancient name of the province of Behar. Pelasgus, the ancestor of the Pelasgi, is said by Asiut, the Greek poet, to have sprung from the black earth, B.C. 700.

PELICAN, a genus of birds of the family Pelecanidæ. The pelican is said to breed on palmyra trees on the Godavery, in the midst of populous villages, within reach of the hand. Pelicans and a species of stork have for long built their nests in a tope near the village of Pulgurapally, about 39 miles N.E. of Cuddapah. Dr. Jerdon mentions a pelicanry in the Carnatic, where for ages past the pelicans had built their rude nests on rather low trees in the midst of a village, undisturbed by the presence of the people. The pelican is a favourite food with the Lohanna of Sind. Pelicans feed chiefly on fishes, but do not dive for their food. The Pelicanidæ of the E. Indies are as under:—

- Pelecanus crispus* of E. Europe.
- P. inflatifrons*, *Blyth*.
- P. Javanicus*, *Horsf.*, lesser white pelican.
- P. mitratus*, *Licht.*, crested pelican.
- P. onocrotalus*, *Linn.*, European pelican.
- P. Philippensis*, *Gmel.*, grey pelican.

P. onocrotalus is a regular visitant to India during the cold weather, sometimes appearing in considerable flocks, and clearing whole tanks and jihils of their fish, to the dismay of the fishermen. They form a dense line across the tank, and regularly hunt it from one end to the other.

P. mitratus is spread through S.E. Europe, part of Africa and Asia. *P. Philippensis* is the most abundant in India. *P. Philippensis* is used by the fishermen in some parts of the E. of Bengal, as a decoy in catching certain kinds of fish (*Colisa* and *Anabas*), which are attracted, it is said, by the oily secretion exuding from the birds' skins. They are tied to the boat, sometimes with their eyes sewn up. — *Adams*; *Blyth* in *B. As. Soc. Jo.*, Nov. 1856; *Jerdon*.

PELLICULARIA KOLEROGA. *Graham Anderson*. The fungus causing leaf-rot in coffee leaves.

PELLITORY, *Anacyclus pyrethrum*.

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|---------------------|-------|---------------------------|--------|
| Akurkurra, . . . | ARAB. | Pietro, Parietaria, . . . | IT. |
| Sesin, . . . | CHIN. | Akkaraputta, . . . | SINGH. |
| Zahn-wurtzel, . . . | GER. | Akkarakarum, . . . | TAM. |

A plant of N. Africa, of the Levant, Barbary, Persia, and the S. of Europe, cultivated for its root, which is used in medicine as a masticatory and a stimulant. The root is without smell, and when dry it is some inches long, tough, fibrous, of the thickness of a quill, externally grey, internally white. Pellitory is to be found in most Indian bazars, it being an export from Mocha to Bombay. The Vytians prescribe an infusion along with the lesser galangal and ginger as a cordial and stimulant in the lethargic stage of typhus fever,

and in paralytic affections. They also use it as a masticatory for the toothache. — *Ben. Phar.*; *Faulkner*; *Ains. Mat. Med.*

PELLEY, COLONEL SIR LEWIS, author of *Journey from Persia to India*; *Account of the Province of Fars*; *Letters on Herat, Bokhara, Bandar Abbas*; *Notes on Lingah, Kishm, and Bandar Abbas*; *On the Coast between Bandar Abbas and Cape Jashk*; *On Bushahr and Shiraz*; *On Bushahr and its Districts*.

PELOPÆUS, or dirt dauber, a genus of neuropterous insects, constructs earthen cells side by side, and sticks them on walls and rafters. *Pelopæus spinicola* is the wasp-mason.

PELTIPHORUM LINNÆI. *Bentham*. *Cæsalpinia Braziliensis*, *Linn.*, a small tree which yields the orange-coloured Brasilletto wood. — *Müller*.

PELUSIUM, an ancient port on the Red Sea.

PEMBANOO, a root of Arakan, from which an arrow-root is prepared, and sold at four rupees the maund. The root is obtainable in large quantities.

PEMBERTON, CAPTAIN R. B., author of a *Mission to Bootan*, As. Jl., 1840, xxxi. part 1, 81; also a Report on the Eastern Frontier of British India, Lond. Geo. Trans., 1838, viii.

PEMMICAN, preserved meat, baked dry and reduced to powder.

PEMPHERIS MOLUCCA. *Cuv.* Length, 3½ inch. Inhabits Sea of Penang, Moluccas, Batavia, and Japan. Its air-vessel is large and thick. — *Cantor*.

PEN.

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|------------------------|------|--------------------------|------|
| Plumes à écrire, . . . | FR. | Penne da scrivere, . . . | IT. |
| Schreibfedren, . . . | GER. | Pera atwoli, . . . | RUS. |
| Kalm, GUL, HIND, PERS. | | | |

Pens for writing are formed of the quills of the goose, swan, fowl, or other bird. Metal pens, now extensively used, are manufactured in vast quantities at Birmingham, London, and Sheffield, the materials used being steel, copper, brass, gold, zinc. Pens for writing in the Arabic and Persian and Deva-nagari characters are made of reeds, and the pens or styles for writing on palm leaves are points of steel.

The reed pens for writing Persian, Urdu, and other characters are called—

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|---------------------|-------|---------------------|------|
| Beroo, Burro, . . . | HIND. | Pedda relloo, . . . | TEL. |
| Perin nanil, . . . | TAM. | | |

The reed pens used by all Muhammadans in writing the Arabic or Persian character, are the product of the *Saccharum sara*, a thin, hollow-jointed reed. Persian reeds are most esteemed, being tougher, and capable of being used much longer than the Indian reed. The *Arundo karka*, *Linn.*, is also similarly used in Sind. *Jeremiah*, xvii. 1, says, — 'The sin of Judah is written with a pen of iron.' In many parts of British India and in Burma, iron styles are alone used, forming the letters by making incisions into the palm leaf. Books thus written are very durable. This style is broad at the top, and at one side is sharp like a knife, to prepare the palm leaves. — *Ains. Mat. Med.* p. 194.

PENÆA MUCRONATA.

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|----------------|-------|-------------------|------|
| Anzerut, . . . | ARAB. | Sarcocolla, . . . | LAT. |
|----------------|-------|-------------------|------|

A gum-resin obtained from the bark of the *Penæa mucronata*, brought chiefly from Kâbul, is sometimes called *Sarcocolla*. It is taken as a laxative both in powder or in infusion. It formerly was used in Europe for wounds. — *Cat. Ec.*, 1862.

PENÆUS, a genus of the crustacea, viz.—

- Penæus canaliculatus*, *Edw.*, Celebes, Mauritius.
- P. monoceros*, *Edw.*, India.
- P. indicus*, *Edw.*, Coromandel.
- P. monodon*, *Edw.*, Indian coasts.
- P. affinis*, *Edw.*, Malabar.
- P. brevicornis*, *Edw.*, Indian coasts.
- P. crassicornis*, *Edw.*, Indian coasts.
- P. styliferus*, *Edw.*, Bombay.

PENANCE, called Tapas, practised by Hindu gods, Rishis, Rakshasas, and men, to obtain boons.

PENANG, also called Pulo-Penang and Prince of Wales' Island, an island in lat. 5° 25' N., long. 100° 19' E., is about 15 miles in length, and from 7 to 12 miles in breadth. It contained a population of about 150,000 in 1871,—Chinese, 22,720; Malays, 20,110; Indians, 71,100; and Europeans, 513. Until the year 1870, it was a dependency of the Bengal presidency, under the Governor of Singapore. Bell Retiro, or Government Hill, 4½ miles west of the fort, is 2550 feet above the level of the sea; and West Hill, lying a mile farther west, is 2713 feet. Nothing can exceed the beautiful luxuriant vegetation of this island, which was an uninhabited forest, when given by the king of Qedah to Captain Light in 1785, as the marriage portion of the king's daughter, whom Captain Light married; but it was sold to the British by the king in 1800. The traveller looks down from the summit of Penang Hill on Province Wellesley, opposite the Strait. Malacca is 250 miles from Penang, and Singapore half as much farther. Province Wellesley is 24 miles long by 8 in breadth. Until lately, Penang supplied the London market with nutmegs, but cocoanut trees have taken their place. Tapioca, for the American market, has been grown to a great extent in the province, realizing fortunes to the planters. Water is brought by pipes into the town from the base of a hill six miles off, and there is a plentiful supply throughout the year. Penang, like the other settlements in the Straits, is a free port.—*Woods of Penang*, by Colonel Frith; *Rambles in Java*; *Watten's Voyages*, p. 144.

PENANG LAWYER, a walking-stick, a young plant of the *Licuala acutifida*, *Mass.*, the Plass tikoos of the Malays. It is a small palm, attaining generally only 3 or 5 feet, but in exceptional cases from 15 to 20 feet, in height. The Penang lawyers are prepared by scraping the young trunk with glass, so as to wholly remove the epidermis and nothing more, the inside being the substance of rattan. It is on this account that the smaller thin sticks are so much more sought after than the larger thicker ones, and are so rare. The sticks are ultimately straightened by fire, and then polished. They are imported into England as walking-sticks. About 400 reached Liverpool annually, from 1851 to 1855. Other species of *Licuala* are longipes, paludosa, and peltata.—*Seem*.

PENATES, amongst the ancient Romans, were gods corresponding to the Pitri of the Hindus. A knowledge of their gods is useful in explaining the Hindu deities. Amongst the Romans the gods were arranged into Dii majorum gentium, and Dii minorum gentium. The Dii majorum gentium were the great celestial deities, and those called Dii selecti. The great celestial deities were twelve in number,—Jupiter, Juno, Minerva, Vesta, Ceres, Neptune, Venus, Vulcanus, Mars, Mercurius, Apollo, and Diana.

The Dii selecti were eight,—Saturnus, Janus, Rhea, Pluto, Bacchus, Sol, Luna, and Genius, the daemon or tutelary god, who was supposed to take care of every one from his birth, during the whole of life.

Nearly allied to the genii were the Lares and Penates, household gods, who presided over families.

The Lares of the Romans appear to have been the manes of their ancestors; and there were Lares domestici et familiares, campitales et viales, militares et marini. Small waxen images of them were made, and covered with dog-skin, and at festivals brought to the hearth and sacrifices offered to them.

The Penates were of two kinds, Patrii penates familiaresque. Those of the ancestors were worshipped in the innermost part of the house, which was called penetralia, also impluvium or compluvium. The city and temples were under the protection of the Publici penates, and these were worshipped in the Capitol.

The Dii minorum gentium were Dii indegetes or heroes, of whom were Hercules, Castor and Pollux, Æneas and Romulus, as also the Roman emperors.

The gods called Semones were Pan, Faunus, Sylvanus, Vertumnus, Pomona, Flora, Terminus, Fales, Hymen, Laverna, Vacuna, Averruncas, Fascinus, Robigus, Mephitis, Cloacina; also Nymphs in the earth, Orcades in mountains, Dryades in woods, Hamadryades, Napææ, Naiades, Nereides, and Oceanides; and each river had a particular deity. The Semones also included the infernal judges, Minos, Æacus, and Rhadamanthus, Charon, and Cerberus; also the virtues and affections, such as Piety, Faith, Hope, Concord, Fortune; also foreign deities, the winds and the tempests, Eurus, Austor or Notus, Zephyrus, Boreas, Africus, Corus, Æolus, and Auræ.

The Romans worshipped some gods that they might do them good, and others that they might not hurt them, as Averruncas and Robigus. There was both a good Jupiter and a bad; the former was called Diyois or Diespiter, and the latter Vejois or Vediovis. But Ovid makes Vejois the same with Jupiter parvus or non magnus.—*Adams's Roman Antiquities*. See Hindu; Pitri.

PENCIL.

Surme-ka-kalm, . HIND. | Kalam, . . . MALAY.

A leaden pencil in the Russian language is Karan-dash, supposed of Turkish origin, Kara meaning black, and Dash a stone.—*De Bode's Tr.*

PENDIENG. JAV. A girdle of small silver plates.

PENDOPPO. JAV. An awning formed of leafy branches.

PENEBARROO. SINGH. A wood of the eastern province of Ceylon. A cubic foot weighs 61 lbs., and it is said to last 50 to 90 years. It is used for rafters, etc. Fences made of the sticks of this tree are the most durable of all.—*Mr. Mendis*.

PENG-LAY-OUN. BURM. In Amherst, a timber used for spear handles; a most valuable wood, compact, homogeneous, very heavy, of a deep brown colour and fine grain, having no tendency to split, and exempt from attacks of insects. In Tavoy is a wood of this name, described as a strong, rough, red wood, like *Acacia seriassa*.—*Cat. Ex.*, 1851; *Mr. Blundell*.

PENGOLIN.

PENGOLIN, *Manis aurita* of Sikkim, *M. Javanica* of Malayana, and *M. pentadactyla* of all India, species of the Edentata, the scaly ant-eaters. The Malay name of Pengolin is indicative of its faculty, when alarmed, of rolling itself up into a compact ball, by bending its head towards its stomach, arching its back into a circle, and securing all by a powerful fold of its mail-covered tail. The Singhalese regard it with aversion, one name given to it being the Negombo (devil).—*Tennant; Jerdon.*

PENGUIN, of the antarctic circle, is the *Aptenodytes Fosteri*. The jackass penguin is the *Spheniscus demersa*; it is an ugly bird.

PENICILLARIA SPICATA. *Scurtz.*

Panicum spicatum, *Roxb.* | *Holcus spicatus*, *Linn.*

Kouze-kouze, . . .	AFRICA.	Jungeroo, . . .	PANJ.
Sajjeo, . . .	CAN.	Cunghoo, . . .	SANSK.
Dourandelle, . . .	EGYPT.	Cumbu, . . .	TAM.
Bajra, . . .	HIND.	Gantelo, Sajjalu, . .	TEL.
Muttari, . . .	MALEAL.		

This is grown over all British India, and up the Suttlej valley between Rampur and Sungnam to an elevation of 5000 feet. Its grain is reckoned more delicate and of a less heating nature than sorghum; like it, it is made into cakes and porridge. The natives of some parts of Africa prepare from this grain a kind of malt, which they use for making beer. Its chemical composition averages—moisture, 11·34; nitrogenous matter, 10·34; starchy matter, 73·03; fatty or oily matter, 3·29, and mineral constituents, 1·99.

PENINSULA. In the South and East of Asia there are several peninsulas, as that of Arabia, the peninsula of Gujerat, the peninsula of India, and that of Malacca. India, south of the Vindhya Range and of the Nerbadda river, is termed the Peninsula by the British, but the Hindus and Muhammadans call it the Dakshana, Dekhan, or South. At its broadest part, in lat. 22° N., it is 1200 miles across, but it tapers away towards the south, and in lat. 7° 40' N. ends in the promontory of Cape Comorin, the Arabian Sea washing its western and the Bay of Bengal its eastern shores. A range of mountains runs along each side of this peninsula, parallel with the coast, leaving between them and the sea, in their whole length from north to south, a belt of low level land from 20 to 50 miles in breadth. These two mountain ranges are termed the Eastern Ghats, and the Syhadri mountains or Western Ghats, and have an average elevation of 1200 to 3000 feet respectively, but solitary mountains and spurs from the western range attain an elevation of 6000 and 8000 feet above the level of the sea. The Western Ghats, on the side next the sea, are scarped, and at places sink precipitously 2000 feet to the level belt below. The Eastern Ghats do not fall so abruptly; but both ranges are covered with forests, through which a few passes lead from the coast into the interior of the country, which is an upraised table-land from 1200 to 3000 feet above the sea, the general declivity of the land being from west to east. To the north of Coimbatore the peninsular chain rises abruptly to 8000 feet as the Neilgherry Range, and continues northward as the mountains of Coorg. The rainfall, which is great on the western coast, is less on the Neilgherries, being 100 inches at Dodabetta and 64 inches at Ootacamund. Farther north, in the Nagar district

PENINSULA.

of Mysore, there are many rounded or table-topped hills, 4000 to 5000 feet high, often cultivated to that height, and rising in some places to upwards of 6000 feet. The climate of the western part is very humid, and particularly so at the town of Nagar or Bednor, 4000 feet high, on a spur of the western chain, where the rain is said to last for nine months. The Peninsula of India is held by the independent kingdoms of Travancore, Cochin, Mysore, Hyderabad, Kolhapur, with smaller feudatory states; but the larger part is under the British, forming the Madras and Bombay Presidencies, the Central Provinces and Orissa being under Bengal, the British armies being distributed over the whole of the Dekhan, and branching out into some of the adjoining provinces; thus the Bombay Presidency has its troops in Gujerat, Cutch, and Sind on the north-west of the Peninsula, as also at Aden, and the Madras troops hold British Burma.

Gneiss, granite, syenite, and trap form the prominent features of the Dekhan rocks; clayslate, mica, chlorite and hornblende schists, sandstones and limestones, with fossils of a post-oolite age, being the stratified rocks through which they burst. The greenstone is supposed by some observers to decompose into a deep black earth, light when dry, and cracked and rent by the sun in the hot season, but forming a tenacious soil in the rains, rendering marching almost if not wholly impracticable. It is called Regur in the Dekhan, and is the 'cotton soil' of Europeans, by many of whom it is regarded as indicating an unhealthy locality. The granite rocks, on the other hand, decompose into a red sandy soil, which is generally hard, and as it allows a rapid percolation of water and quickly dries, it is less fertile, but is considered more favourable to health.

Gold is found on the Neilgherry Hills in the numerous streams of the Malabar collectorate; in the Dharwar, Bellary, Cuddapah, and Madura collectorates; in Mysore, in the Northern Circars, and is everywhere washed for; diamond, corundum, spinel, ruby, garnet, topaz, tourmaline, and beryl also occur.

The Tamil-speaking inhabitants of the Coromandel coast can make themselves intelligible when they get into the districts on the western coast of the Peninsula, where Malealam is vernacular. They number about 14 millions of souls, and are largely engaged in agriculture. They have several extensive landed proprietors, and from prehistoric times had several independent kingdoms. One of these was the Pandya, another the Chola, regarding which little has come down to the present day. The several capitals of the Chola were at Conjeveram, Woriur, Combaconum, Gangondaram, Tanjore.

The people speaking the Telugu call themselves Teling. They are about 13 millions in number, and occupy the eastern region between lat. 12° and 18° N.

The people who speak Canarese are about nine millions in number, chiefly in the centre of the Peninsula; they are a tall and singularly graceful race, with whom a community something akin to polyandry is very prevalent. In this they somewhat resemble the Kandiyans of Ceylon, the Coorg race, and the Nair of Travancore.

The Malealam language is spoken in the south-west of the Peninsula by about 2½ millions, and

PENNAKONDA.

the Tulu on the seaboard, somewhat to the north, by about 100,000 or 150,000.

The people speaking the Mahratta language have widely emigrated from the ancient Mahārashtra, but the bulk of them are to be found occupying between lat. 17° and 21° N.

The peninsula of Gujerat forms the province of Kattyawar, is well defined by the Gulfs of Cutch and Cambay, with the Runn on the N. and E., and the sea on the south. It contains 19,850 square miles, and Col. Jacob estimated its population at 1,475,685.

The great triangular plateau which forms the Peninsula of India, in the later tertiary period was an island separated by an arm of the sea (now forming the valleys of the Ganges and Indus) from the Himalayan and Burmese countries.—*Wallace*, i. p. 316; *Finlay*. See Malay Peninsula.

PENNAKONDA, in the Bellary district of the Madras Province, in lat. 14° 5' 15" N., long. 77° 38' 10" E., with a population in 1871 of 5106. It was once an important fortress, to which the Vijayanagar rulers retired after the battle of Talikot, A.D. 1565.—*Imp. Gaz.*

PENNAR, called also Pinakini, and written Pennair. The name of two rivers in South India, which both rise north-west of Nundidrug in Mysore, and flow eastwards through the Carnatic into the Bay of Bengal. Pennar or Pennair is the name adopted by European geographers; but Pinakini, apparently derived from the bow of Siva, is that by which these rivers are known to the Canarese inhabitants of Mysore. The northern river falls into the sea 19 miles south of Nellore, and the southern, or Dakshana Pinakini, discharges near Fort St. David, a few miles north of Cuddalore. Both are utilized for irrigation.

PENNISSETUM CENCHROIDES. *Rich.*

Dhaman, Kurkan, . HIND. | Taura, . . . TR.-IND.

Common in many parts of the Panjab plains, and reckoned one of the best of all the wild grasses for forage, both for cows and horses. Near Multan its seeds are swept up from the ground to be used as human food.—*Stewart*; *Powell*.

PENNISSETUM ITALICUM. *R. Br.* Kangni, HIND. German millet or Italian millet, Panicum italicum. Seeds small, delicate, and wholesome, used as food.—*Powell*, i. p. 383.

PENNISSETUM TYPHOIDEUM. *Rich.* Bajra.

Penicillaria spicata, *Willd.* | Panicum spicatum, *Delile*.

This ripens its millet in about three months. Its stems are thick, and reach a height of six feet. The maximum length of a spike is about 18 inches; and Colonel Sykes counted on one plant 15 spikes, and occasionally 2000 seeds on one spike. It requires a rich and loose soil. It furnishes a valuable green fodder, and a good hay.

P. cereale, *Trin.*, of China, furnishes a millet for cakes.—*Von Mueller*.

PENNYROYAL, *Mentha pulegium*. A mint used in cookery as seasoning and in distillation, propagated by division of the plant.

PENTACME BURMANICA. *Kurz.* A timber tree of British Burma.

PENTACME SIAMENSIS. *Kurz.* *Shorea siamensis*, *Miq.*, *Hook.*, a timber tree of Prome; yields a useful resin.

PENTAPETES PHÆNICEA. Its flowers yield a mucilaginous cooling juice, used in special diseases; considered to be astringent. It is an

PEORI.

erect growing plant; flowers axillary, large, expand at noon, of a bright red colour, and drop by daylight next morning.—*Powell*, i. p. 383; *Riddell*; *Voigt*.

PENTAPTERA ARJUNA. *Rozb.*

Terminalia arjuna, *W. and A.*

Touk-kyau, . . . BURM. | Arjuna, Arjunsadra, *DUK.*

Is a common forest tree; the bark is used internally by the natives as a tonic, and is also applied externally as a vulnerary. It and *P. glabra* grow in all the teak forests of Burma. Their dark-brown timber is as strong as teak, and usually attains a girth of from seven to nine feet, with height in still more lofty proportion. This timber has never been fairly tried for ship-building.—*Riddell*: *McC.*; *Hind. Th.* ii. p. 100; *Rozb.*; *Voigt*.

PENTAPTERA TOMENTOSA. *Rozb.*

Terminalia tomentosa, *W. and A.*

Asun, BENG., <i>DUK.</i> , <i>PANJ.</i>	Kumbuk, . . . SINGH.
Maddi, . . . CAN.	Maratha, . . . TAM.
Peen-sal, . . . DUKH.	Karoo maratha, . . . "
Sain, Asun, . . . PANJ.	Nalla maddi, . . . TEL.

This tree grows in the Peninsula of India and in the north-west of British India. It has thick leathery leaves; fruit smooth, five winged. It grows to be a large timber tree of much utility, flowering time April and May; the seed ripens in the cool season. The wood is very tough, and used for making shafts to gigs, etc. Is very hard and heavy, and not so stiff as teak. In the Panjab it furnishes an excellent, hard, and compact timber, well suited for building and railway purposes. It is found in Kangra in sub-Himalayan forests, and is not uncommon as far west as the Ravi, but not of a large size. It is well suited for avenues and plantations in the east of Panjab.—*Rohde's MSS.*; *Powell*; *Rozb.*; *Voigt*.

PENTATEUCH, from the Greek *Pente*, five, and *Techos*, a book, the first five books of the Old Testament. Muhammadans allege that the Pentateuch, the Psalms, and the Gospels in use with Christians have been greatly altered. The five books of Confucius are the Shu-king, a book of history; Lee-king, book of rites;—? or book of odes; Yih-king, or book of changes; and the Chun Ts-ou, or spring and autumn annals.

PENTATROPIS SPIRALIS. *Don.*

P. microphylla, <i>Rozb.</i>	<i>Asclepias microphylla</i> , <i>R.</i>
<i>Oxytelma caudata</i> , <i>Ham.</i>	<i>A. tenuiflora</i> , <i>Rozb.</i>
Van-veri, . . . BEAS.	Pula-pala, . . . TEL.
Perpadagum, . . . MALEAL.	Amhar-vel, . . . TR.-IND.
Pushpi, . . . PANJ.	

Grows throughout British India; flowers used medicinally.—*Stewart*; *Rozb.*

PEN-T'S'AU of China, a celebrated work on the materia medica in use by Chinese physicians.—*Smith*.

PEON. HIND. A footman, a foot soldier; amongst the British in India, an office servant. The chess term of pawn is derived from it.

PE-OO. HIND.? MAHR.? A grain-pit beneath some part of a house, in which rice is lodged. It is apt to germinate if there be heavy rain.—*Marshall*.

PEOR, the Greek phallus, the Roman priapus, the Hindu lingam.

PEORI. HIND. Indian yellow; a pigment used in lumps; a precipitate, collected and dried from the urine of cows which have been fed on mango leaves. 'Wilayiti peori' is chrome yellow (chromate of lead).—*Powell*.

PEPPER.

PEPPER.

Filfil (Abiad, white);	Sahan, . . . PALEMBANG.
Aswad, black), . ARAB.	Perez, Peretz, . . . RUS.
Micha, BALI.	Maricha, SANSK.
Hu-tai-iau, CHIN.	Gammirra, SINGH.
Mirch, HIND.	Mulagu, TAM., TEL.
Nero (black), IT.	Beber, TURK.
Chubai, MALAY.	

There are several peppers, black, white, and long pepper, melaguetta pepper, cayenne or Chili pepper, Guinea and Jamaica pepper, and cubeb pepper, the last used as a medicine, the others in food as condiments. The black pepper of commerce is obtained from the dried unripe fruit (drupes) of *Piper nigrum*, a climbing plant common in the East Indies. Three kinds of black pepper are distinguished by wholesale dealers. *Malabar pepper*, the most valuable, is brownish-black, free from stalks, and nearly free from dust. *Penang pepper* is brownish-black, larger, smoother, free from stalks, but very dusty. It is sometimes used in England to manufacture white pepper. *Sumatra pepper*, the cheapest sort, is black mixed with stalks, and contains much dust. Under the name of Sumatra pepper, some dealers include the Penang or brownish-black sort, and the black Sumatra sort. Three kinds of varieties of white pepper have also been distinguished. *Tellicherry pepper*, which is of two kinds; large fine Tellicherry pepper is larger and whiter than any other description of white pepper, and fetches a higher price; small or coriander-like pepper is shrivelled. *Common white pepper* comes from Penang by Singapore; it is round, and not shrivelled; its value depends on its size and whiteness. *English bleached*, or white pepper. When the two preceding sorts are scarce, brown Penang pepper is bleached. The yellowest and largest are chosen for this purpose, for neither an expensive nor small sort would pay.

Imported into India.

Year.	Lbs.	Rs.	Year.	Lbs.	Rs.
1875-76,	5,906,764	12,37,090	1877-78,	8,360,069	15,73,398
1876-77,	6,461,897	13,34,536	1878-79,	6,842,010	11,62,477
1877-78,	8,360,069	15,73,398	1879-80,	9,040,141	16,00,224
1878-79,	6,842,010	11,62,477	1882-83,	5,168,286	12,36,707
1879-80,	9,040,141	16,00,224			
1882-83,	5,168,286	12,36,707			

Exported from India.

Almost all from the Straits. A small quantity from Ceylon.

Pliny states that the price of pepper in the market of Rome in his time was, in English money, 9s. 4d. a pound. The pepper alluded to must have been the produce of Malabar, the nearest part of India to Europe that produced the article, and its prime cost could not have exceeded the present one, or about 2d. a pound. After the great discovery of Vasco da Gama, the price of pepper fell to about 1s. 3d. a pound, a fall of 8s. 1d. from that of the time of Pliny, and of 4s. 9d. from that of the Muhammadan Arabs, Turks, and Venetians.

Black Pepper.

Hu-tai-iau, CHIN.	Lada, Lada-itam, MALAY.
Kala mirch, HIND.	Maricha, "

White Pepper.

Safed mirch, HIND.	Lada puth, . . . MALAY.
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Black pepper and white pepper are the fruit of the *Piper nigrum*, the former being the whole berry dried, while the white pepper is the ripe berry deprived of its skin by soaking it in water, rubbing it off, and drying it in the sun. This has less of the

PEPPER.

peculiar virtues of the spice than black pepper, and is not so generally used. Pepper is a warm carminative stimulant; it is used largely in Europe, but in the south and east of Asia, the capsicum, chilli, or cayenne spice, is preferred. It strengthens the stomach, gives tone to the system, and assists digestion. In the Northern Circars of the Madras Presidency, the *Piper triocum*, an excessively pungent pepper, is largely used as a substitute for black pepper; in America, the plants *Peltobryon longifolium*, *Serronia jaborandi*, are similarly used, also at the Cape, *Cocobryon Capense*.

The black pepper vine is indigenous to the forests of Malabar and Travancore, and for centuries has been an article of exportation to European countries from that coast. Although growing in other countries of the east, Malabar pepper is considered to be the best. Its cultivation is very simple, and is effected by cuttings or suckers put down before the commencement of the rains in June. The soil should be rich; but if too much moisture be allowed to accumulate near the roots, the young plants are apt to rot. In three years the vine begins to bear. They are planted chiefly in hilly districts, but thrive well enough in the low country in the moist climate of Malabar. They are usually planted at the base of trees which have rough or prickly bark, such as the jack, the erythrina, cashew-nut, mango tree, and others of similar description. They will climb about 20 or 30 feet, but are purposely kept lower than that. During their growth it is requisite to remove all suckers, and the vine should be pruned, thinned, and kept clear of weeds. After the berries have been gathered, they are dried on mats in the sun, turning from red to black. They must be plucked before quite ripe, and if too early they will spoil. White pepper is the same fruit freed from its outer skin. In this latter state they are smaller, of a greyish-white colour, and have a less aromatic or pungent taste. The pepper vine is very common in the hilly districts of Travancore, especially in Cottayam, Meenachel, and Chengannacherry districts, where, at an average calculation, about 6000 candies are produced annually.

To prepare white pepper, the berries are allowed to ripen and become of a beautiful bright red colour; the outer or fruity skin becomes tender and soft, and is of a sweetish taste. When plucked, the berries are collected in loosely woven bags, and steeped for a day or two in water, either hot or cold. This serves to loosen and detach the red pulpy seed covering, and when taken out and dried in the sun, a little hand-friction is all that is required to clear the seeds. They are then winnowed, and thus made ready for the market.

Long pepper, the *Chavica Roxburghii*, or *Piper longum*, is another cultivated species. It is readily propagated by cuttings. The stems are annual, and the roots live for several years, and, when cultivated, usually yield three or four crops, after which they seem to become exhausted, and require to be renewed by fresh planting. The berries of this kind of pepper are lodged in a pulpy matter, like those of *P. nigrum*. They are first green, becoming red when ripe. Being hotter when unripe, they are then gathered and dried in the sun, when they change to a dark-grey colour.

Japan pepper, *Xanthoxylum (Fagara) piperitum*, *D.C.*, is used as a condiment in China and Japan. The fruit capsules are remarkably fragrant when

PEPPER COAST.

bruised, from a pungent aromatic principle residing in the tubercles of the rind.

Ethiopian pepper is the fruit of *Xylopia aromatica*.

The seeds of some species of fennel-flowers (*Nigella sativa* and *arvensis*), natives of the south of Europe, were formerly used instead of pepper, and are said to be still extensively employed in adulterating it; and a substitute for pepper is the fruit of *Tasmania aromatica* in Van Diemen's Land. Wild pepper, Filfil burree, the fruits of several species of *Vitex*.—*Ben. Ph.* p. 30; *Hogg*; *R. Brown*; *Eng. Cyc.*; *Drury's Letters from Malabar*; *Drury's Useful Plants*; *Faulkner*; *M'Culloch's Dict.*; *Simmonds*; *Smith*.

PEPPER COAST, the line of coast in Sumatra from Ayer Bangie to the north point.

PEPPERMINT, *Mentha piperita*, an aromatic herb, raised from seed. This plant might be grown for distillation on the hills of India, and become a valuable article of commerce; grows freely on the plains.—*Jaffrey*.

PEPPER ROOT.

Filfil-mooeh, . . . ARAB.	Pippali-mula, . . . SANSK.
Pipili-mool, . . . HIND.	Tipili moolum, . . . TAM.
Granthika, . . . SANSK.	

The root of the long pepper is a favourite medicine of the Hindus; it possesses the virtues of the berry, but in a weaker degree, and is prescribed by them in cases of palsy, tetanus, and

Pepper root is procurable in most Indian bazars.—*Ainslie*.

PEPUL. HIND. *Urostigma religiosum* or *Ficus religiosa*. Its Sanskrit names are Chaladala, quivering branches; Peppala, the preserver; Kungarasan, elephant's food; Ashvatter, not durable. The trunk, when old, has many ridges and hollows, as if many trunks were united; the bark is deemed a good tonic.

PERA. HIND. A kind of sweetmeat, made in round cakes.

PERAK territory, on the Malay coast, has a coast line of 100 miles, the depth inland being about 50, and the Dending and Sambilan islands belong to its chief. On the banks of the Perak river are situated the bulk of the inhabitants, consisting of Malays and a few Chinese, who, with some wild and wandering tribes of the Malayan race in the interior, prey upon each other on land and sea. The pirates of Laroot and Perak infested the seaboard for fully half a century after the settlement of Penang. Perak is said to produce graphite, galena, antimony, iron, tin, gold, diamonds, and garnets.—*M'Nair*, p. 25.

PERAK. HIND. A head ornament, worn by married women in Spiti, Ladakh.

PERCH, *Perca fluviatilis*, is the most beautiful of the fresh-water fishes of Europe, and it extends into Asia. It is very prolific, and 250,000 eggs have been counted in one of middle size.

PERE PONS, a native of France, who resided in India. In A.D. 1740, he sent home a report on Sanskrit literature.

PERGANNAH or Pargana, in the Muhammadan land revenue system, a subdivision of a subah. Pergannah, under the revenue system of the Hindus, was a district of 100 villages. It is still recognised throughout Northern India, but the number of villages greatly varies, and the officers employed in it are only known by their enjoyment of lands or fees hereditarily, or by being the

PERIM ISLAND.

depositories of all registers and records connected with the land. The province in Bengal called the Twenty-four Pergannahs was acquired by treaty from the Nawab of Bengal on the 20th Dec. 1757. In the ancient Hindu system of government, the administrative officers are ordered to be lords of 10, 100, and 1000 towns, but the Pergannah alone corresponds to the 100 towns. The townships everywhere remain entire, and are the indestructible atoms from an aggregate of which the most extensive Indian empires have been formed.

PERGULARIA ODORATISSIMA. *Smith*.

<i>Asclepias odoratissima</i> , <i>Roxb.</i>	<i>Cynanchum odoratissimum</i> , <i>Lour.</i>
Ye-lan-hiang, . . . CHIN.	Sita manoharam, . . . TEL.

A creeper with a climbing woody stem, cracked bark, flowers yellow and very fragrant, well adapted for covering trellis work. It furnishes a perfume. Often cultivated in the gardens in Moulmein. *P. pallida* is described by Wight.—*Jaffrey*; *Mason*.

PERICLYTE. The Muhammadan doctors so read the word Paraclete. Periclyte means illustrious, and they quote it from the gospel of St. Barnabas, of which the Moriscoes in Africa have a Spanish translation.—*Salé's Koran*, p. 9; *Chatterfield's Hindustan*, p. 271.

PERICOPSIS MOONIANA. *Thw.*

Dalbergia Mooniana, *Thw.* | Nadoong, . . . SINGH. This large and very valuable timber tree is common about Colombo and the southern and central parts of Ceylon at no great elevation. The timber is used for building purposes and for furniture.—*Beddome*.

PERILLA ARGUTA. *Benth.* An annual herb of Japan. An infusion of this plant is used to give a deep red colour to table vegetables. *P. ocimoides*, *Link.*, of Upper India, is similarly used.—*Von Mueller*.

PERIM ISLAND, in the Gulf of Cambay, is little more than a mile in length, and 300 to 500 yards broad. Its lighthouse is in lat. 21° 35' 15" N., and long. 72° 20' E., and lies 3 miles from the nearest point of the Kattyawar coast. In 1836 vast quantities of fossils were found in it. It is the Baiones Island of the Periplus. It is surrounded by an extensive rocky reef on all sides except the south, and rises so sheer from the bottom of the sea, that in some places, a few yards from the shore, there is a depth of 11 and 12 fathoms of water.—*Imp. Gaz.*; *Findlay*.

PERIM ISLAND, situated in lat. 12° 40' 30" N., and long. 43° 23' E. (King), in the narrowest part of the straits of Bab-ul-Mandab, is distant from the Arabian coast nearly 1½ miles, and from the African between 9 and 10 miles; greatest length, 3½ miles; average width about 1½. It is termed by the author of the Periplus of the Erythraean Sea, the island of Diodorus, and is known amongst the Arabs as Mayoon. Its formation is purely volcanic, and consists of long, low, and gradually sloping ranges of hills. Albuquerque landed upon it in 1513, on his return from the Red Sea, and, having erected a high cross on an eminence, called the island Vera Cruz (Portuguese in Asia, i. p. 193). It was again occupied for a short time by the pirates who frequented the mouth of the Red Sea, plundering the native vessels engaged in the Indian trade; but, having made a fruitless search for water, they removed to Mary's Island, on the east side of Madagascar (Hamilton, i. p. 43). In

March or April 1799, it was taken possession of by the E. I. Company, and a force under Lieutenant-Colonel Murray was sent from Bombay to garrison it, with the view of preventing the French troops, then engaged in the occupation of Egypt, from proceeding to India to effect a junction with Tipu Sultan, but it was found untenable as a military position, and the troops were accordingly withdrawn. In consequence of increasing steam navigation in the Red Sea, Perim was re-occupied in the beginning of 1867, and a lighthouse erected 1861. The island is trachytic.

PERINTALU. *TEL.* A wife, a domestic woman, but generally applied to deified women. Many of the small temples in Telingana villages are dedicated to goddesses so called, the spirits of dead women.—*W. E.*

PERIOPHTHALMUS. A species of this, a little mud fish, is found in great quantities on the mud banks of the Ganges delta, in company with the scarlet crab. This little fish skips along the surface of the water by a series of jumps. It leaps on land. The species in Fiji is the *P. kolrenteri*, *Günther*. These fishes are able to progress out of the water in humid places, and to hunt after their prey, which consists of terrestrial insects.—*Moseley*, p. 295.

PERIPLOCA APHYLLA. *Duch.* The Bata, Barrarra, Barre of the Panjab. A plant with leafless erect stems, common in many places, Trans-Indus and in the Salt Range, and occurring in the outer hills east to the Chenab, occasionally up to 3500 feet. In parts of the Peshawur valley it is so common as to be used for fuel. It is eaten by goats. The buds are eaten raw, or cooked as a vegetable, and as food they are considered to have a beneficial effect on wounds.—*Dr. J. L. Stewart*.

PERIPLUS, a work by Arrian.

PERIPLUS of the Erythraean Sea, a book by a Greek merchant, which contains the best account of the commerce carried on in the early part of the Christian era, from the Red Sea and the coast of Africa to the E. Indies. He seems to have traded at Berenike, a great seaport in the southern extremity of Egypt, from which he made several voyages to India. It gives an account of six voyages. It describes the whole coast of the Red Sea, and of the S.E. of Arabia, and that of India from the Indus round Cape Comorin to a point high up on the coast of Coromandel, and gives accounts of the commerce carried on within those limits, and in some places beyond them. Until nearly his time, the ships from India continued to cross the mouth of the Persian Gulf, and creep along the shore of Arabia to the mouth of the Red Sea, but at about the time of this author, the Greeks from Egypt and the Arabs used to quit the coast soon after leaving the Red Sea, and stretch across the Indian Ocean to the Malabar coast.

Letronne supposes that the author of the voyages wrote in the time of the Emperor Septimius Severus and his son, namely, between the years 198 and 210 of the Christian era. C. Müller gives A.D. 80 or 90. Dean Vincent supposes it to have taken place about the tenth year of the reign of Nero (A.D. 64). It was doubtless near, but subsequent to this era. The author had navigated the Red Sea, the Persian Gulf, and the coasts of Malabar and Coromandel, and had

resided many years at Baroach, in the court of a Hindu raja. He describes Arabia as having pilots, sailors, and persons following maritime pursuits. He mentions that large vessels were navigating the Bay of Bengal to the Ganges and Chryse. See Aden; Kahan.—*Elph.* p. 107.

PERIYA ALVAR, a native of Villipattur. He was one of the twelve Alvares who flourished in the reign of Vallabadeva Pandiyan, king of Madura. He wrote 400 stanzas of the *Nalavira Sirunantam*.

PERIYA-TAMBIRAN. *TAM. Lit.* the great god, the name of an image in the temples of the Grama Devata.

PERMANENT SETTLEMENT is a revenue term in British India, usually applied to an agreement introduced in 1793, during the administration of Lord Cornwallis, by which certain agents for collecting the rents or taxes on the land were granted the right of occupying that position permanently, on making annual payment to the Government of the amount of rents then being paid. The object in view was to create a body of landlords like those of Great Britain. It is an immemorial law that 'the resident ryot, simply as such, is, throughout the continent of India, possessed, as a rule, of hereditary occupancy at the customary rates of the vicinity.' Lord Cornwallis insisted that 'whoever cultivates the land, the landlord can receive no more than the established rent. To permit him to dispossess one cultivator for the sole purpose of giving the land to another, would be vesting him with a power to commit a wanton act of oppression, from which he could derive no benefit.' The enhancement of rent was positively prohibited, unless the ryots could be induced to 'cultivate the more valuable articles of produce, and to clear the extensive tracts of waste which are to be found in almost every zamindari in Bengal.' The zamindar of those days was perfectly cognisant of the conditions attached to his position, among which was the right reserved by the Court of Directors, as successors of the Moghul Government, to make 'from time to time all such regulations as may be necessary to prevent the ryots being improperly disturbed in their possessions, or loaded with unwarrantable exactions.' The court added that their 'interposition, where it is necessary, seems also to be clearly consistent with the practice of the Moghul Government, under which it appeared to be a general maxim that the immediate cultivator of the soil, paying the rent, should not be dispossessed of the land he occupied.' The zamindars, in the year 1880, were supposed to be receiving about 16 millions sterling from their ryots, but paying to the Government only the amount fixed in 1793, and the cultivators have not shared in the increase of wealth of the country. Three times since the middle of the 19th century, the Government has tried to alleviate the cultivators' condition in British India, but hitherto without success. The exact number of occupancy ryots is not known, but there are nearly ten millions who pay less than £10 a year rent for their holdings, and of these upwards of six millions pay less than 10s. Below these two classes, again, come the untold millions of day-labourers, who barely exist from hand to mouth, and whose unparalleled fecundity is becoming a positive danger to the State. See Pattadari; Ryotwari.

PERNIS APIVORA, honey buzzard of Europe, Asia, N. Africa; migratory. In India, common (if identically the same), in addition to *P. cristata*. In the crestless or sub-crested Indian specimens (adults) there is a marked tendency to the development of three dark stripes on a white throat, and in the *Astur trivirgatus* and sundry other Indian species. Such may be a hybrid race between *P. apivora* and *P. cristata*.

PEROO, *SIND.*, is a term applied, with some prefix, to the fruits of four plants. *Salvadora Persica* is called Khari peroo, *S. Indica* is Mitha peroo, *Solanum incertum*, *Dun.*, is Kan peroo, and *Phyllanthus multiflorus* is Phika peroo.

PERQUISITES from cultivators, called in N. India, *Ambaunga*, *Anjali*, *Siaodi*, *Thapa*, are given from the threshing-floor to the Brahmins, *Purohit*, *Guru*, herd, and village god.

PERRON, a French sailor on board the frigate *Sardaigne*, which came to India in the year 1774. He became acquainted with De Boigne in 1789, and was appointed Captain-Lieutenant in the 2d brigade of Sindia's army. He distinguished himself at the battles of Mirta and Patan, and he obtained an independent command. At the battle of Kardla, he was in command of ten of De Boigne's trained battalions, with cavalry and artillery, with 5000 men under Filoze, and 3000 under Hessing; the total number of the Peshwa's troops, with those of Sindia and Holkar, was 130,000, and 10,000 Pindari. The Nizam's army, under M. Raymond, 20,000 horse, besides artillery. The armies met between Parinda and Khardla, 12th March 1795, and, after a brief success, the Nizam fled, but Raymond retreated in order. Perron ruled the territory from Lahore to Kota, and between Aligarh and Jodhpur. About the 5th September 1803, he surrendered to Lord Lake, and went to reside at Chanderannuggur. Perron at one time enjoyed a revenue of nearly half a million, and when he surrendered to Lord Lake he carried away with him whatever property he was able to save. Perron had succeeded the veteran De Boigne in the command of Sindia's army, when de Boigne, after many years' service, returned to Savoy with a fortune of nearly half a million sterling. He was an able commander, and was assisted by several able officers of his own, with the object of disciplining Sindia's troops; lands had been assigned between the Ganges and the Jumna, over which, and at Delhi, Agra, and Futtehghur, Perron ruled with almost regal power; and though ruling ostensibly as Sindia's deputy, it was in the name of the Moghul emperor, or the blind Shah Alam, who was in fact no more than a helpless captive and puppet in his hands.—*Havelock*.

PERRON, ANQUETH, DE, an oriental scholar, with the desire to learn Zand; in November 1754 he joined the French army.

PERRY. Sir Thomas Erskine Perry, Knight. For fifty years he led a very active life as lawyer, politician, law reformer, as seen in his book on *Oriental Cases*; was Chief Justice of Bombay, and President of the Bombay Asiatic Society. Member of Parliament seven years, Member of the Indian Council twenty years. Author of a Letter to Lord Campbell on Law Reform, Lond. 1850; Translation of Savigny's Law of Possession, Lond. 1848; Character of the Hindoo King Asoka, Bom. As. Trans. iv.; On the Aboriginal Tongues of India,

in Bom. As. Trans. 1852; A Bird's-eye View of India.—*Dr. Buist's Catal.*

PERRY, COMMODORE, of the United States, in 1854 negotiated a treaty with Japan.

PERSEA of the ancients, fruit of *Balanites Egyptiaca*.

PERSEA GRATISSIMA. *Gærtn.* The alligator pear or avocado pear of the West Indies, receives its name in consequence of the resemblance in form between its fruit and that of the *Pyrus*. It is about the size of an apple tree; the leaves are oblong, veiny, and the flowers small, and of a greenish-yellow colour. The fruit is the size of a large pear; inside it is yellow, and contains a kernel enclosed in a soft rind. In taste it resembles the peach, but more agreeable, though not so sweet. It is sometimes eaten with pepper and salt, but more frequently with a little sugar and lime-juice. Three varieties are mentioned, the red, the purple, and the green.—*Icones; Eng. Cyc.*

PERSEPOLIS of the Greeks, *Elymais* of the Hebrews, and *Istakhr* of the Persians, in the province of Fars, is now a series of ruined remains, known to the people of the country as the *Chahl Minar* (forty pillars) and *Takht-i-Jamshid* (Throne of Jamshid). They are supposed to comprise the palaces of Darius, Xerxes, and Artaxerxes, each on a separate terrace. The area of the *Chahl Minar* is 50,000 square feet. In the vicinity are the sculptures known as the *Naksh-i-Rustum*, and about 30 miles distant are ruins called *Madar-i-Suliman*.

Persepolis is about 12 miles from the river *Bendamisr*, at the foot of the rocky spur which confines the northern end of the *Marvdasht* plain on its eastern side. From the foot of the slope, a platform 500 yards long and 312 broad has been built out into the plain. Of the portal two marble columns and four bulls are standing; other two columns have fallen. Of 72 pillars in the great hall, at the top of the steps, only 12 are now standing. The breadth of the great hall is 127 yards. The hall of Darius is 60 yards, and that of Xerxes 33 yards. An inner hall had 100 columns. The columns stood on inverted lotus flowers, beautifully carved. The reputed tomb of Darius is higher up.

The tombs of Persepolis are on opposite sides of the *Marvdasht* plain, which here begins to narrow between spurs of the mountains which bound it on the north. Persepolis stands at the foot of the eastern spur. The tombs are carved in the face of the western spur, the cliffs of which rise from 90 to 500 feet, the tombs, five in number, being excavated at heights from 90 to 200 feet. The bodies of the kings have long been taken away, and the broken slabs that covered them lie on or in each empty sarcophagus. In preparing their sepulchres, the first thing that the old Persian monarchs did was to carve a huge cross on the face of the cliff. At the only accessible tomb, near the top of the cross, is a graven effigy of a king, bow in hand, worshipping fire burning on an altar. Along the foot of the rocks are sculptured tablets, spiritedly executed, representing equestrian combats on a gigantic scale; and one huge carving portrays the submission of Valerian kneeling to Shahpur, explained in an inscription in Pehlavi, with an illegible Greek inscription. A marble fire-temple in high preservation is a few yards from the foot of the cliff.

It is not known whether it was originally

called Elamais, Istakhr, or Takht-i-Jamshid. After the establishment of the empire by Cyrus, he and his immediate descendants divided their residence chiefly between Babylon, Susa, and Ecbatana. He was a conqueror long before he was a king; and while Cambyases, his father, reigned in Persia, and occupied his own capital, and Cyaxares, his uncle, yet lived, and maintained his state in Ecbatana, the principal city of the Medes, the present Hamadan, Cyrus resided at times in Babylon, which he had subdued, and then afterwards at Susa, when the death of Abradates gave the whole province to his generous prince and friend. Cyrus did not live more than eight years after he became master of the empire, and therefore could not have had much time to distinguish Persepolis by any long residence there, though he often went thither. We learn from several writers that at different periods both Cyrus and his successors had added to the splendours of the city which the Greeks called Persepolis. Xenophon clearly points out its situation (Strabo, Diod. Siculus). — *Porter's Travels*, i. pp. 576, 577.

PERSIA lies between lat. 25° 40' to 39° 50' N., and long. 44° 20' to 61° 35' E., with a population variously estimated at 5 to 7 millions. It is about 1400 miles long from the Khoi and Bayazad road to Gwadar, and 900 miles broad from the Makran coast to the Atrak river. It has 18 great divisions,—Astrabad, Azarbijan, Ardelan, Fars, Ghilan, Isfahan, Kirmanshah, Khuzistan, Khorasan, Kirman, Khemseh, Laristan, Luristan, Mazandaran, Mullayer, Nain, Tehran, and Yezd.

Modern Persia consists of three principal parts, viz. Fars proper (Persis proper), Laristan near the Persian Gulf, and Behbahan, or the country of the Khogilu, which represents the circle of Kobad. Behbahan is bounded on the north by the great belt of mountains which separate Irak-i-Ajam from the southern provinces of Persia. The northern and north-eastern shores of the Persian Gulf form its boundary to the south, Ram-Hormuz and the Ka'b country lie to the west, while Shuzistan separates Behbahan on the east from the direct dependencies of Fars. On the east and south-east, Behbahan is surrounded by the Mamaseni tribe; on the north and north-west by the Bakhtiyari; and on the west and south by the Ka'b Arabs. Also the mountainous region to the north and north-east of the plain of Behbahan is occupied by the Khogilu tribes.

The greater part of the most important region of modern Persia corresponds to the ancient Media; the province of Azerbaijan, west of the Caspian, answering to Media Atropatene, and that of Irak-Ajami to Great Media. The northern part of Khorasan is the ancient Parthia, and the lowland round the south-east of the Caspian was Hyrcania.

The whole of the centre of Persia is composed of immense salt deserts, with such oases as Yezd and Beerjan scattered about it, at too extended intervals, however, to afford cohesion and mutual support. The desert may be roughly said to extend all the way along the Afghan frontier from a point 100 miles south-west of Herat to the Persian Gulf, and from this broad base it projects to within 100 miles of Teheran. North of this salt desert lies the magnificent province of Khorasan; west of it the fertile provinces of the

Caspian, including Azerbaijan; and south-west and south, the rich mountain region running continuous with the Turkish frontier and the waters of the Persian Gulf; the great range on the north, joining the Hindu Kush south of Herat.

The general aspect is desolate and bare in the extreme. On its north and east, Persia is nearly enclosed by deserts. On the north is the great desert of Khiva, or, as it is called, the Kara-Kum. This stretches along the whole north border of Khorasan and Afghan-Turkestan as far as Balkh. It is more of a waste than a desert, and in spring is covered with grass, and is said then to be quite practicable for light troops. Its greatest breadth is from the Aral S.W. to the Atrak river, about 250 miles, and the breadth gradually lessens as it goes eastwards till near Balkh it has a breadth of only a few miles. Its general breadth, however, is from 180 to 150 miles. Its length from the Caspian to the vicinity of Balkh cannot be less than 600 miles.

The great salt desert of Khorasan extends from Kum and Kashan to the east for a distance of 300 miles, and is probably continuous with that of Seistan, and if so, it probably runs to the south of Tabas.

The desert of Kirman stretches to the N.E. of Kirman, and is supposed to be continuous with that of Seistan and Makran. It stretches from Khubbis to the lake of Seistan, 150 miles, thence along to the S. bank of the Helmand, up to the vicinity of the valley of Peshin on the Kaudahar and Quetta road; then it turns S.W., keeping away from Nushki Sarawan and Kharan, and then runs S. between Banpur and Panigur to near the sea at Gwadar. To the west of this it keeps north of Jalk and Sib, and the continuation of the mountains of Kirman, till it again intervenes between Khubbis and Seistan. Its length is about 400 miles, and breadth 200 miles, from the Helmand to the parallel of Kohuk. The sand of this desert is of a reddish colour, and so light that when taken into the hand it is scarcely palpable. It is raised by the wind into longitudinal waves, sloping to the leeward side to the height of 10 or 20 feet, and is there perpendicular.

The mirage is common; and the dangerous Bad-i-simum often blows between the months of May and August, injurious to everything with life,—even camels and other hardy animals perish,—and killing men sometimes instantaneously, or after hours or even days of suffering.

Nowhere else than in Persia is the zodiacal light, known as the Subh-i-sadiq, more beautifully seen.

Azerbaijan climate is healthy and bracing, the soil is remarkably fertile, and the inhabitants are hardy, active, and industrious. Khorasan contains more fertile territory than the British Isles, and could easily furnish sustenance for twenty million people. Bailie Fraser described the Goorgan part of Khorasan as 'one of the loveliest regions in the world.' Baron de Bode, a Russian traveller in Khorasan in 1836 and 1848, affirmed the district south of the Kopet Dag to combine the 'excellences of an English landscape and the scenery of the Caucasus.'

The most ancient of the races that ruled in Persia was the *Peshadian* dynasty. Of the fourteen known names of this dynasty, the first was Kaiumars, who reigned at Balkh. In this line, the

names occur of Jamshid, who reigned at Persepolis; Feridun, who was restored by Kawa, the blacksmith; and Afrasiab, who was king of Turkestan.

The *Kaianian* dynasty followed the *Peshdadian*, and amongst its rulers were Kai Kobad (Kai signifies the mighty); Kai Kaus, son or grandson; Rustam, his general; Kai-Khusr, grandson, Cyrus the Great; Lohrshab, son of Orond Shah; Gushtasp, his son, Hystaspes of Grecian history; Isfendiari, his son, Apanda or Astyages of Ardashir; Darab and Dara, the Darius overcome by Alexander.

The authentic history of this region begins about B.C. 710 with Djoce, a Mede, who, as also his son Phraortes, fell in attacks on Assyria. Cyaxares, king of the Medes, son of Phraortes, about B.C. 606, combining with Nabopolassar, king of Babylon, and with the Arabians, Persians, and Armenians, overran Assyria, and took and destroyed Nineveh.

After the death of Alexander, Persia as well as Syria fell to the lot of Seleucus Nicator, who established the dynasty of the *Seleucidae*. Antiochus Soter succeeded Seleucus Nicator; and in the reign of his successor, Antiochus Theos, Arsaces, a Scythian, who came from the north of the sea of Azof, induced the Persians to throw off the Greek yoke, founded the *Parthian* empire, and made Rhages his capital. This was likewise the period of the foundation of the *Bactrian* kingdom by Theodotus, the governor of it, who, finding himself cut off from Syria by the Persian revolution, declared his independence. Arsaces is called *Asteh* by eastern writers, and is said to have been a descendant of the ancient Persian kings. When he gained the kingdom, it is said he promised to exact no tribute, and merely to consider himself as the head of a confederacy of princes, united for the double object of maintaining their independence and freeing Persia from a foreign yoke. This is the commencement of that era of Persian history called by eastern writers *Muluk-ut-tuwaif*, or commonwealth of tribes, called by the Persians the *Ashkanians* and *Ashganians*, known to the Greeks as the *Arsacidae*, from B.C. 253 to A.D. 223, in which year Ardashir Babegan-bin-Sasan, the Artaxerxes of the Greeks and Romans, founded the *Sassanian* dynasty, which ruled till A.D. 632. Amongst this dynasty were Shahpur, who defeated the emperor Valerian near Edessa; also Khusr, Nushirwan, famed for his benevolence, and who largely extended his dominions, took Antioch and Jerusalem, and all Egypt southwards to Nubia. 90,000 Christians are said to have been slain when Jerusalem was then taken.

Persia was overrun by the Arabs, A.D. 632-636, and was held by the khalifs for 600 years.

It was at Nahavend, in A.D. 632 (Hijira 21), that the celebrated battle of Kadesia was fought, in which, after three days, the troops of the khalif Omar, commanded by the Arab chief Noman, who was there slain, defeated the Persians, in the reign of Yezdejird, one of the *Sassanide* princes. This monarch, shortly after his defeat, was killed by a miller of Merv, with whom he had taken refuge. The dynasty of the *Sassanides* had reigned in Persia 415 years. It became extinct with Yezdejird, and Persia then fell under the dominion of the khalifs, who compelled the population to embrace Islamism. The town of Nahavend is

built just at the foot of the north-east range of hills, upon some craggy points. In the centre of the town rises the citadel, a most imposing-looking structure, and really of some strength. It crowns the top of the highest of the craggy points upon which the place is built, and is supported by immensely solid mud walls from without, rising at least 100 feet high.

Persia has since been under many dynasties, either ruling in whole as it now is, or in parts of it. The khalifs ruled from A.D. 632 to 1258, when Mustasem was put to death by Hulaku, the grandson of Chengiz Khan; the Samani of Bokhara, Khorasan, and Persia held sway A.D. 874 to 998; the Ghaznavi of Persia and India, A.D. 975 to 1183; the Seljuk in Iran, Kirman, and Anatolia, A.D. 1037 to 1283; the Mosul branch of the Atabegs of Irak, under the Seljuk, from A.D. 1127 to 1197; the Il-Khani of Persia, a Moghul dynasty, A.D. 1259 to 1346; and the Sufi and Zand of Persia, A.D. 1499 to 1797.

Under the *Kaianian*, *Parthian*, and *Sassanian* dynasties, the metropolis of the empire was moved from Persepolis to Pasargadae, and thence to Susa; and in modern times the Sufi, Zand, and Kajar reigning families have successively chosen as their respective capitals, Isfahan, Shiraz, and Teheran. The last place is within a few days' march of the native districts of the ruling Kajar tribe, near Astrabad—Aga Muhammad Khan, Kajar, in 1788 having founded the present dynasty.

Kurna is one of three *Apameas* built by Seleucus in honour of his first wife, Apamea, daughter of Artabazus. It is situated at the point of a triangle formed by the confluence of the rivers Euphrates and Tigris, and was formerly a place of consequence. Kurna is situated on a low flat, with apparently a rich soil, and along the river are low banks to prevent the country being flooded. Meshed, the capital of Khorasan, forms the connecting link of Central Asia and Persia, the Caspian and Afghanistan. Meshed lies on the highway from the Caspian to Herat, distant about 215 miles from the latter place. Its garrison consists of nine battalions of infantry, a regiment of cavalry, and a couple of field batteries, in all about 8000 men. A force of about 1000 horsemen employed in patrolling the road between Mashad and Khosan, the frontier town. Tabreez, the administrative centre of Azerbaijan, draws to itself the commerce of Turkey, of Persia, and of Russia, and distributes around the manufactures for which it has ever been famed.

The men of Kasvin, Tabreez, Hamadan, Shiraz, and Yezd are as remarkable for their courage as those of Kum, Kashan, and Isfahan are for their cowardice. The nomade tribes are all predatory, and glory in that, but they hold thieving in detestation; they delight to listen to romantic tales. The *Iliyat* nomade tribes are sincere, hospitable, and brave, but rude, violent, and rapacious. The chiefs of the military tribes form the hereditary nobility.

From time immemorial, the three races, Persian or Pehlavi, Arab, and Turkoman, have been striving for mastery, but the Persian inhabitants of the towns and those of them engaged in cultivation are not warlike, and the contest has been between the Persian nomade and the Turkoman nomade, the two great military classes of the population.

The Persian nomades all belong to the Pehlavi stock, though their dialects are different. They inhabit Kirman, nearly all Fars, a part of Irak, and the whole of Kurdistan, a region stretching through the ranges of highlands from near the entrance of the Persian Gulf in a north-west direction, along the left bank of the Tigris as far as Armenia.

The Turkoman nomades entered Persia with conquering armies, and have come from the banks of the Volga, from beyond the Oxus, and from the plains of Syria. Their habits are the same as the Persian nomades, but they speak a different language, and from the invasion of the Arabs till the death of Nadir Shah, the rulers of Persia had either been Arab or Turkoman. No member of the Persian nomade tribes had ever ascended the throne. It is this, probably, that gave rise to the bloody strife between the Zand and the Kajar tribes.

The Zand are the most illustrious of all the Persian tribes, and one of their chiefs, Karim Khan, after the death of Nadir Shah, succeeded in establishing himself in Isfahan and the southern provinces. The Kajar are a Turkish tribe brought by Timur from Syria, and settled between Elburz and the Caspian. After the death of Nadir Shah, a deadly war raged between Karim Khan, Zand, and Muhammad Hasan Khan, Kajar, which ended in Karim Khan's accession. Lutf Ali Khan (1795) was the last of the Zand rulers. — *Kinneir; Watson; Malcolm; Wheeler; Morier; Fraser; Monteith; Shiel, by Lt.-Col. MacGregor*, iv. pp. 358-516.

In addition to the revolutions resulting from contests by the different races within, these territories have been repeatedly overrun by foreign armies, and since the beginning of the 18th century their armies have been defeated by Afghans, Russians, and British; and Russia has compelled Persia to renounce the right of keeping war-ships on the Caspian Sea, and has established for herself a naval station on the island of Ashurada, at the south-east corner of the sea commanding the approach to Asterabad.

Under the present organization, the Persian army consists of 77 battalions of infantry, of an average strength of 800 men; 79 regiments of cavalry, consisting of eight troops of 50 sabres; a strong regiment of engineers, and 200 guns. The various grades are—Amir-i-toman, or general of division; Amir-i-pung, or general of brigade; Surtip, or colonel. The regimental ranks are represented by Sarhang, or lieutenant-colonel; Yawar, or major; Sultan, or captain; Naib-i-awwal, or first lieutenant; Naib-i-doyun, or second lieutenant. A sergeant is called Vakeel, a corporal a Dabbashi, and a private Sarbaz. The bone and sinew of the Persian army is derived from the Turk tribes of Azerbaijan, from the Kurds of the mountainous districts of Persian Kurdistan, and from the Lur, Bakhtiyar, and Iliyat tribes who inhabit the mountain chains extending southward and eastward from the great range of Zagros. The standing army of Persia is, with the exception of the Shah's body-guard, made up of regiments nominally raised in the above districts; the chiefs and khans of the various tribes are nominated to commissions in the regiments furnished by these clans. The men are brave, but need leading. In 1861,

20,000 Persian troops and 82 cannon surrendered, almost without fighting, to 5000 Merv Tekke horsemen, armed only with spears and matchlocks. That terrible disaster to Persian arms destroyed the Shah's prestige on the Turkoman border. Its population, composed of townspeople 1½ millions, nomades and villagers 2½ millions, is under 5 millions; and Teheran and Tabreez have each 120,000, Meshed 70,000, Isfahan 60,000, and Shiraz 40,000. The most powerful of the nomades, the Il-Khani of Kaskai, has 25,000 or 30,000 black tents; Kelhor of Kermanshah have 11,000; Zengeneh, 10,000; the Sheqhagi of Azerbaijan, 15,000 tents and houses; and besides these are about 100 minor tribes.

The Persians are all of fair complexion. The Arab, the Persian, the Afghan, and Sikh, when speaking of the people of India, call them 'black men'; even in India, the descendants of the Arab, Persian, Moghul, and Afghan conquerors use the same designation,—'Kala Admi,' literally black man, being ever in their mouths; and Hindus themselves, in their various tongues, likewise so distinguish themselves from all the fair foreign races.

Persia is a thoroughly aristocratic country, where high birth and polished manners are much considered. In this point it differs much from Turkey. Owing to his politeness towards strangers, and an apparently hospitable disposition, the first meeting with a Persian usually makes a favourable impression. He is quick-sighted, sociable, witty, and affable, buoyant in spirits, well acquainted with the forms of politeness, and to a certain extent inquisitive in matters of science and art. The offering from an inferior is called Peshkash. A gift or recompense from a prince or superior is called Inam, or Khelat, also Bakhshish, a Persian word much used in this sense by the Turks. Among themselves, with their equals, the Persians of the higher classes who are settled in towns are affable and polite, to their superiors servile and obsequious, and towards their inferiors haughty and domineering.

Marriages are of two kinds, one the Aqdi, with a girl of the bridegroom's own rank, the other the Seegha, with a woman of humbler birth. A practice prevails of marrying under a contract for a period. Many of the women read and write, especially the Kajar women. Persians consider the number thirteen so unlucky, that in general they will not even name it. When they have occasion to allude to this number, instead of mentioning Sezdeh (thirteen), they say Ziyad (much more), or Hech (nothing). The Persians shave the crown and hind part of the head, leaving a tuft on the top, and hair on either side, which some keep closely clipped above the ears, and others wear in long masses of ringlets.

The usual riding costume of a Persian gentleman consists of a black lambskin cap, pinched into a conical shape. An open shawl surcoat, lined with fur, reaches about half-way down the thigh; the sleeves are cut off a little below the elbow. These surcoats seldom cost less than £25, often much more. Under this a light gown is worn, reaching nearly to the ankle, open on the sides for about a foot from the bottom, and with slits left open under the arms and inside the elbows. A shawl is tied round the waist, and supports a long dagger with a handle of ivory or bone, sometimes

ornamented with jewels. In cities, the surcoat is usually laid aside, and in winter a cloak of cloth is substituted. On horseback, a pair of roomy Hessian boots, of black or red leather, are drawn over the voluminous shalwar or Cossack trousers.

The natives of Persia do not recline on cushions in the luxurious manner of the Turks, but sit in an erect posture on a thick felt, called a *namad*. They have seldom or ever fires in their apartments, even in the coldest season; and in order to be warm, wrap themselves in a fur pelisse, or a *barouni*, which is a handsome robe of crimson cloth, lined with shawls or velvet. Like other oriental nations, they rise with the sun.

The dress of Persian women consists of a pair of immensely wide trousers, like a couple of petticoats tacked together, made of silk or cotton, and fastening round the middle by a running string; a very short chemise of gauze, reaching only to the waist; a *kurtui* or jacket reaching to the hips, having open sleeves, which may be buttoned close if required; an *arackchin* or small skull-cap upon the head, and sometimes a *charkud* or handkerchief thrown over the head and descending on the shoulders and back. In full dress a Muhammadan lady wears the *Peshwaz* or Persian robe, in which dancing women usually perform. It has long tight sleeves, a tight body crossed in front, and a very voluminous muslin skirt, the most fashionable amplitude being about forty, or even sixty yards in circumference. This garment is often trimmed in a costly manner with gold or silver lace, and is only worn as a bridal dress or at domestic festivals. The Persian ladies regard the bath as the place of their greatest amusement. They make appointments to meet there; and often pass seven or eight hours together in the carpeted saloon, telling stories, relating anecdotes, sharing their *kaliouns*, and completing their beautiful forms into all the fancied perfections of the east,—dyeing their hair and eyebrows, and curiously staining their fair bodies with a variety of fantastic devices, not unfrequently with the figures of trees, birds, and beasts, sun, moon, and stars. This sort of pencil-work spreads over the bosom, and continues down as low as the navel, round which some radiated figure is generally painted.

There are two harvests in the year; that of the *Saif* or summer, reaped in the end of autumn, consists of rice, cotton, maize, *Holcus sorghum*, *Panicum Italicum*, *Cicer arictinum*, *Eryum lens*, *mashek*, *Phaseolus radiatus*, the castor-oil plant, *sesamum*, and some garden vegetables. An exhaustive system of agriculture is practised in Persia, which keeps her impoverished.

In several parts of the country are copper, lead, and iron mines, and Fars yields sulphur in abundance; and if these mines were properly worked, the profits would be very great.

Persian weights are:—

Nokhood (*Cicer arictinum*).

24 *nokhood* = 1 *miscal*, about one-sixth of an ounce.

90 *miscals* = 1 *vakka*, nearly 1 lb. *avoirdupois*.

8 *vakkas* or 720 *miscals* = one *man* of *Tabreez*. In different places varying from 7 to 7½ lbs.

2 *Tabreez man* = 1 *kharwar* or ass-load, 725 lbs.

The value of its external commerce has been estimated at four or five millions sterling. The port of *Abushahr* (*Bushire*) trades chiefly with India, and of its five great caravan lines, one

passes westward from Central Persia towards Baghdad, Mesopotamia, Syria, and Asia Minor; a second runs northward through *Erzerum*, and into Europe by the way of Constantinople; a third goes also to Europe by Tiflis. The fourth runs eastward to Bokhara and China. And the fifth proceeds to India by two distinct lines, which unite at Herat. One of these routes comes to this town from Irak and the south-western provinces of the kingdom; and the other route leads from the north-west, by Teheran, Nishapur, and Mashed. Eastward of Herat, the united lines pass through Kandahar, Kābul, and Jalalabad, to Attock, from whence it branches out to different parts of India. The manufactures are shawls, carpets, felts, silks, velvets, cotton piece-goods, weapons, paper, leather, and furs. The merchants have each a cypher in which they carry on all their correspondence. Merchants of Yezd are found in Bombay, the Mauritius, Java, and China.

After Persia was overrun by the Muhammadans from Arabia, most of the people seem to have become Muhammadans, and from that time little is known of the funeral customs of the fire-worshippers in the years preceding the arrival of a small remnant of them on the coast of Gujerat. In ancient Persia, the dead were exposed in natural caves or *dokhmas*, or in the mountain valleys. At the present day, unless a death happen to take place during the night, the funeral follows immediately after it. The body is washed with rose-water; then, being wrapped in a white sheet and cotton shroud, it is carried on a bier to the grave. If the deceased be rich, a funeral feast is kept for several days after the ceremony, and alms are distributed at particular intervals. But when a person of rank dies, it is not unusual for the king to command the body to be conveyed to Mashed-Ali, or one of the other places of Shiah pilgrimage; followed by his charger bearing the arms, clothes, etc., of the deceased, and also by numerous led horses, with the badges, banners, and other expensive insignia of funeral state.

Mr. Stack, a recent traveller, came to the conclusion that a residence in Persia is calculated to beget a positively 'Lucretian hatred' of religion. Of the city and shrine of Kum he speaks with abhorrence, as the stronghold of the most dismal superstitions. The plains and city of Kum are shrouded in a haze of heat and dust, blown up by the hot winds.

The Persian language was the court and official language of the Delhi rulers and of all their allies and subordinate Muhammadan and Hindu kingdoms, and the principal Hindu states still continue its use. For a long time, at Delhi, two languages were used by the emperors, and there were two parties in the court, the one speaking Persian, and the other Turki, the mother-tongue of Baber, who was a Chaghtai Turk. In A.D. 1871-72, in eight districts of the N.W. Provinces, the Urdu or Persian reading pupils of the *Taballi* and *Halkabundi* schools largely exceeded the Hindi or Nagri reading scholars, ranging from two-fifths to three-fourths. All educated Muhammadan men in India write in Persian, but speak Urdu. Women always write in Urdu. The more celebrated of the Persian writers are Fardusi, Ferishta, Hafiz, Jelal-ud-Din, Jami, Khusrū, Nizami, and Sadi. Several of the books are not placed in schoolboys' hands; for instance, the Persian Bahar - i - Danish on

woman's guile, the fifth chapter of the *Gulistan* of Sadi, also the love-story of the *Zulikha* of Jami, *Laili* and *Majnun*, *Lazzat-un-Nissa*, *Tuhfa Shahi*, *Tuhfa-ul-Ashakin*.

The modern tongue of Persia is derived from *Zand*, as Italian was derived from Latin; but the Persians now speak a language which is neither Semitic, like Arabic, nor Turanian, like Turkish; it is a branch of the Indo-European or Aryan family of speech. Also, a large infusion of Persian words, however, found its way into Arabic, and through Arabic into Turkish, and the result is that at the present moment the Turkish language, as spoken by the higher ranks at Constantinople, is so entirely overgrown with Persian and Arabic words, that an uneducated Turk from the country understands but little of the so-called *Osmanli*, though its grammar is exactly the same as the grammar which he uses in his Tartaric utterance. Throughout Persia the inhabitants of towns all speak the Persian language. It is spoken in *Eriwan*, and a great part of *Azerbaijan*, *Shirvan*, and *Daghestan*, north of *Caucasus*. The tribes to the west of *India*, especially those of *Khorasan*, understand Persian generally; and their dress, arms, and habitations, while they retain their national peculiarities, approach to those of Persia. The Persian language is met with amongst the *Hazara* Mongols of *Ghito* in *Seistan*, *Ghorband*, *Badkhashan*, and *Baluchistan*. Persian is the official language of *Afghanistan*, but the *Pushtu* is alike the common tongue of the uneducated people and of the *Amir*. The *Afghans* have a few *Pushtu* works, but they read Persian authors by preference, and through them have formed imperfect ideas of geography, astronomy, medicine, and history; these works, full of fictions and deficiencies, have not assisted in developing their faculties. Throughout *British India*, the written language of the educated *Muhammadian* is the Persian. This language was formed after the *Muhammadian* conquest, and its literature is essentially of the middle ages and of modern times. The literatures of the *West Aryans*, Persia, and of the *East Aryans* are thus separated by time as well as by space, for the great literature of *India* belongs strictly to antiquity. The natives of Persia are enthusiastically devoted to poetry. The meanest artisan of the principal cities of that kingdom can read or repeat some of the finest passages from their most admired writers; and even the rude and unlettered soldier leaves his tent, to listen with rapture to the strain of the minstrel, who sings a mystic song of divine love, or recites the tale of a battle of his forefathers. The very essence of *Suficism* is poetry. Many of the tales and stories current throughout central Europe came to it through the Persian.

During the reign of *Shah Abbas the Great*, the English first established commercial settlements in Persia. Two enterprising Englishmen, *Sir Anthony Sherely* and his brother, with a few followers, had made their way to the court of Persia, where they met with a distinguished reception. *Sir Anthony* returned as envoy from *Shah Abbas*, to establish an alliance with the Christian monarchs of Europe for the destruction of the Turks, and with a grant, permitting all Christian merchants to trade freely with Persia. Under the patronage of *Shah Abbas*, the English, the French, and the Dutch had established

factories at *Gombroon*, to which place the Persian monarch afterwards gave the name of *Bandar Abbas*, or the Port of *Abbas*, by which it is now known. *Shah Abbas*, however, had less toleration for the Portuguese, who in 1507, under *Albuquerque*, had conquered and occupied the island of *Hormuz*, at the entrance of the Persian Gulf, not far from *Gombroon*, and he resolved on their expulsion. He was joined in this enterprise by the English, then at war with Portugal, with whom in 1622 he entered into an engagement, granting them half the plunder of the island, and half the future customs of *Gombroon* and *Hormuz*. The Portuguese were driven out, but the promises of the king of Persia to the English were not kept. The factory at *Gombroon* was maintained through many losses and disasters till 1761, when it was withdrawn, in consequence of oppressions of the provincial governor of *Lar*. The death of *Shah Abbas*, in 1628, was followed by the rapid fall of the *Suffavean* dynasty. Four weak princes of that house successively ascended the throne of Persia. During their reign the Turks severed from the Persian empire some of the best of the western provinces, the Arab ruler of *Muscat* possessed himself of the islands in the Persian Gulf, the *Afghans* of the *Abdali* tribe made themselves independent in *Herat*, and the *Ghilzies* in *Kandahar*; and in 1722, within a century after the death of *Shah Abbas*, *Isfahan* was besieged by *Mahmud* of *Kandahar*, to whom *Shah Husain* formally resigned his crown. The *Afghan* dynasty was short-lived. *Mahmud* died insane in 1725. His cousin and only successor, *Ashraf*, was slain in 1730, while fleeing in the desert before his conqueror, *Nadir Kuli Khan*, the warrior *Nadir Shah*. After the abdication of *Shah Husain*, his son *Tamasp* had assumed the name and state of king, and was unceasing in his feeble efforts to recover the crown. *Shah Tamasp* was permitted to enjoy his nominal sovereignty only two years, when he was dethroned by *Nadir Kuli*, who with affected reluctance accepted the crown. Little had remained of Persia in the feeble grasp of *Shah Tamasp*, when in the year 1726, *Nadir Shah*, after a life of vicissitudes, found himself at the head of a predatory band in *Khorasan*, at the age of about thirty-five. The genius of this man alone quickly changed the aspect of affairs, and Persia, from being trodden under foot by all, became during his lifetime a formidable power. Within a few years after his murder in 1747, the mighty empire which he had recreated was dismembered. *Ahmed Khan*, *Abdali*, proclaimed himself king of the *Afghans*, took *Kandahar* and *Herat*, and laid the foundation of an empire, which he extended by conquests more brilliant than those of *Nadir Shah*. The province of *Khorasan* was all that was left to *Shah Rukh*, the blinded grandson of *Nadir Shah*. This was guaranteed in his independent possession by *Ahmed Khan*, but was soon broken up into a number of independent principalities. The southern and western provinces of *Lar*, *Fars*, *Irak*, *Azerbaijan*, and *Mazenderan* were subdued by *Karim Khan* of the tribe of *Zand*, and a prince of the *Suffavean* house, named *Shah Ismail*, a son of the sister of *Shah Husain*, was set up as a king. But he was a mere puppet, and was soon cast into prison, and *Karim Khan* ruled alone. He was a just ruler. In 1763, he granted to the

PERSIA.

British a firman for a factory at Bushire, and for the trade of the Persian rule. Karim Khan died in 1779, after a vigorous rule of 26 years. His death was the signal for fresh revolutions, marked by the most atrocious cruelties, in the course of which the four surviving sons of Karim Khan were savagely mutilated. This state of things ended in 1795, in the elevation to the throne of Persia of Aga Mahmud Khan of the Kajar tribe, the founder of the present dynasty. In 1788, during the brief rule of Jafar Khan, nephew of Karim Khan, and the last representative but one of the Zand family, the British, who during the revolution had been subjected to many oppressive exactions, obtained, through the chief of their factory at Bussora, another firman for unrestricted trade in the Persian dominions. From the success which had attended the invasion of India by Nadir Shah and Ahmed Shah, Abdali, it was believed that the plains of India were exposed to be periodically ravaged by any ambitious ruler in Afghanistan. In 1796, Zaman Shah, grandson of Ahmed Shah, Abdali, advanced to Lahore, with the professed purpose of restoring the house of Timur from the domination of the Mahrattas, and, after some years, in 1801, Captain Malcolm was sent on an embassy to Persia. The re-conquest of Afghanistan was always a favourite dream of the Kajar dynasty, who conceived that their rights of sovereignty over that country were as complete as in the days of the Saffavian kings. In 1828, Futeh Ali Shah was induced by the Russians to advance on Herat, the key of Afghanistan, but two expeditions were unsuccessful. His son Muhammad Shah, who was ever a friend of Russia and an enemy to British interests, revived the project, and with a large force laid siege to Herat, on 23d November 1837. To force the Shah to renounce his ambitious projects, a demonstration was made in the Persian Gulf, by the occupation of the island of Kharak. This induced him to withdraw from Herat, after a siege of ten months, during which all his efforts had been frustrated by the energy and ability of Lieutenant Eldred Pottinger, an officer of the Bombay Artillery. Muhammad Shah died in August 1848, and was succeeded by his eldest son, Nasir-ud-Din. On the death of Yar Muhammad Khan, his successor, feeling himself insecure in power, and being threatened by the Amir of Kābul and by Kohun-Dil Khan from Kandahar, Syud Muhammad Khan made overtures to Persia, and a force was despatched by the Shah nominally to reduce the Turkomans, but in reality to occupy Herat. A force was sent in December 1855, in violation of the agreement made by the Persian Government. Muhammad Yusuf was taken prisoner, and Herat was captured on 26th October 1856. The quarrel could not be adjusted, a British force was sent from Bombay to occupy Kharak, and on the 1st November 1866, war was declared. After a brief successful campaign under Sir James Outram, a treaty of peace, concluded 3d February 1857, was signed at Paris on the 4th March 1857. In this the previous treaty was adhered to for the abolition of slavery in the Persian Gulf. In 1861 an attempt made to arrange for a telegraph line through Persia to Bandar Abbas, failed; but in 1868, the king resolved, in constructing a line from Khanakin on the Turkish frontier, through

PERSIAN GULF.

Teheran, Isfahan, and Shiraz, to meet the British line at Bushire.—*Ouseley's Tr.* i. 451; *Bombay Liter. Trans.* v. 1; *Max Müller at the Royal Institution*; *Treaties, Engagements, and Sunnuds*; *Ferrier's Journ.*; *Kinneir's Geog. Mem.*; *Ferrier's Afghans*; *Pottinger's Travels*; *Col. Chesney, Euphrates and Tigris*; *Skinner's Journ.*; *Ward's Hindoos*; *Milner's Seven Churches of Asia*; *Elphinstone's Caubul*; *Burton's Mecca*; *De Paww, Egypt and China*; *Ockley's Saracens*; *Porter's Travels*; *Lieut.-Col. Stuart's Residence in N. Persia*; *Augustus H. Mounsey, F.R.G.S., Journey through Caucasus and the Interior of Persia*; *Sir John Malcolm, Sketches of Persia and History of Persia*, ii. p. 398; *De Gobineau, Histories des Perses*, Paris 1869; *Quarterly Review*, July 1873.

PERSIAN, a silken fabric of various colours, and exceedingly flimsy in its texture. It is chiefly used in lining.—*Faulkner*.

PERSIAN BERRIES, or Yellow Berries, the fruit of *Rhamnus infectuaria*, used by the modern Greeks to dye morocco leather; employed also in calico printing. The average annual imports into the United Kingdom are about 150 tons. They come from the Levant in hair bales, weighing three and a quarter cwt., or in tierces of four to five cwt., and are used by calico printers for dyeing a yellow colour.

PERSIAN FLEA POWDER, the *Poudre mimaque*, is sold in Paris, in boxes, for destroying immediately, bugs, fleas, ants, lice, black beetles, caterpillars, and all insects. Chamomile rouge, the beautiful red *Pyrethrum* (*P. carneum*, formerly *Chrysanthemum coccineum*), in England a pretty garden ornamental flower, is a dread enemy to fleas.

PERSIAN GULF extends from lat. 24° to 30° 20' N., and long. 48° to 58° E. It runs in between Arabia and Persia from the Straits of Ormuz, which are 35 miles wide, to the mouth of the Shatt-ul-Arab. In breadth at the narrowest part, between Cape Musseldom and Gombroon, it is 55 miles; and at the widest part, between Bushire and Khodema, three degrees and 20 miles; and is about eight degrees in length from the Straits of Ormuz. It is known in eastern manuscripts as the Sea of Fars, the Sea of Oman, the Sea of Kirman, Sea of Kateef, Sea of Basrah, deriving these and other names from the adjoining provinces, and from remarkable places on its Arabian and Persian shores. This great inland sea makes a rift in the continent of Asia 450 miles deep and from 100 to 180 broad, and comprises an area of about 70,000 square miles. The northern coast belongs exclusively to Persia. The southern coast is partly Turkish and partly independent Arab. Muscat formerly possessed—by right of 100 years of fiefdom—almost a third part of the north coast of the gulf, which Persia resumed about 1878. A considerable portion of the southern coast of the gulf, too, has recently passed under Turkish from independent Arab rule. In the early part of the 19th century, the British assumed the political control of the Arab tribes on both shores of the gulf, but the opening of the Suez Canal has admitted of Turkish war-vessels being present, Great Britain retaining free control over the sea. A few years ago Turkish rule reached scarcely farther from the Shatt-ul-Arab than Kowait, but has now added 400 miles of sea-coast. Turkey has ousted the Wahabees

PERSIAN GULF.

out of the broad strip of Arabian coast which bears the name of El Hasa or Lahsa, and in doing so has obtained the two seaports of Kateef and Ojejr, thereby excluding the Wahabees from the sea; and has, on the invitation of the Arab chieftains, carried her flag as far as El Bida, a town on the eastern coast of the bold promontory of El Kutr (Guttur). Where the Turkish authority ends in the neighbourhood of El Bida, what used to be locally known as the Pirate Coast commences, and extends as far as Shinas, on the eastern coast of the bold promontory of Cape Mussendum, which closes the Persian Gulf to the east. From this point, Shinas, the territory of the little independent state of Muscat or Oman begins, from which the Zanzibar dominion is an offshoot. The Pirate Coast acquired its name from the predatory habits of its Arab tribes. An expedition from Bombay in 1809 attacked their stronghold of Ras-ul-Kheima, on the western side of Cape Mussendum, and with the loyal aid of the Sultan of Muscat succeeded in destroying it. A more formidable expedition was organized, under General Keir, in 1819, and the pirates of this coast were effectually brought under control. The Arab chieftains entered into a general engagement to abjure and put down piracy. This treaty is still in force.

It has numerous islands, but only the following are of importance:—Bahrein, 80 or 90 miles in circumference; Kharak, about 4½ miles; Kishm, 54 miles long and 32 broad; and Ormuz, though historically interesting, is a small barren volcanic island, covered with salt. Dr. Jules Oppert claims Bahrein as the common home to which classical and Chaldean tradition trace the ancient Assyrians and Phœnicians alike, with the Tilyun of the cuneiform inscriptions. Arrian called it Τύρος; and Strabo spelt it Τύρος.

Most of the ancient traffic with India seems to have been by way of the Persian Gulf and the Red Sea. The Tyrians established depots on the shores of the Persian Gulf, and the course of trade being through the land of the Cushidi, the races in India came to be included under the ethnological title of Cush (Genesis x. 6), and hence the Persian, Chaldean, and Arabic version frequently render that term by India, Isaiah xi. 2, xviii. 1; Jeremiah xiii. 23. The Mesopotamian Valley is believed to possess a soil rich enough to supply whole nations with corn, if only the increase of cultivation and the prosperity of the cultivators were made matter of imperial concern. The valley of the Karun river, in the south of Persia, offers a scarcely less promising field for the growth of barley and wheat. The survey of the gulf was undertaken between 1820 and 1830 by the officers of the Indian navy. The winds are chiefly easterly and westerly, taking the direction of the coasts. When the S.E. wind sets in, the whole force of the sea is brought to bear directly against the current of the Euphrates, and hence an enormous deposit is effected of the alluvium brought down by the stream, thus barring up its mouth. This deposit, constantly on the increase, progresses, according to Sir Henry Rawlinson, at the rate of a mile in the lapse of 35 to 40 years. A great city, of which the ruins are to be seen above Mahammerah, was an island in the time of Sennacherib named Billat, and has been shown to have been still an island in the time of Alexander.

PESHAWUR.

At the present time it is sixty miles from the mouth of the river, and a succession of cities can be traced upon the desiccated delta below it, along the river, down to the sea. According to that writer, the gulf once extended to Baghdad, 500 miles beyond its present point.—*Ait. Treat. Eng. and Sunn.* iv. p. 199; *Travels in Oman*, i. p. 265; *Col. Chesney, Euphrates and Tigris*, i. p. 568; *Rennell's Memoir*, p. 34; *Taylor*.

PERSIMMON. Tsze, CHIN. The juicy fruits of *Diospyros kaki* and other species.

PERTABGARH DEOLAH, a small principality grown out of Mewar, the raja being descended from a junior branch of the Udaipur house. From the time of the establishment of the Mahratta power in Malwa, the raja of Pertabgarh paid tribute to Holkar. Under the 4th article of the treaty of Mundisore, the British Government acquired a right to the tribute levied by Holkar in Pertabgarh. Raja Dulput Singh succeeded to the state in 1844. Dulput Singh was grandson of the chief of Pertabgarh, and had succeeded to the state of Dungurpore on the deposition of Jeswunt Singh, by whom he had been adopted. On his succession to Pertabgarh he relinquished Dungurpore to Oody Singh, son of the Thakur of Sablee. He was guaranteed the right of adoption. The area of the state is 1460 square miles, the population 150,000; the revenue, after deducting the tribute paid to the British Government, and about two lakhs of rupees enjoyed by feudatories of the state, is in British money about 262,400 rupees. The chief receives a salute of fifteen guns.—*Rajasthan*, ii. p. 76; *Treaties*, etc.

PERUMAL, literally the great personage, the most common name of Vishnu in the Tamil country. Perumal Tirunai, a festival celebrated in honour of Vishnu and his consort.

PERUN. HIND. (qu. Pairahan, PERS.) An article of dress amongst Hindu women.

PERUVIAN BARK, or Cinchona bark, is obtained from the Cinchona genus of trees,—*C. officinalis*, *C. succirubra*, *C. Calisaya*, *C. micrantha*, etc.,—natives of the Andes of Peru, from whence plants have been introduced by Mr. Clement Markham into India and into Java. Quinine is obtained from the bark. The Cinchonæ, when cultivated, not only yield their normal proportion of quinine, but in some species at least this is susceptible of a large increase.

PESCADORE, Pehoe, or Ponghu Islands consist of 21 inhabited islands, extending from lat. 23° 12' to 23° 47' N., and long. 119° 16' to 119° 39½' E. No part of the group rises higher than 300 feet above the sea, and the summits of the islands between Fornosa and the mainland are flat.—*Horsb.*; *Collingwood*.

PESHAWUR, a province in the extreme N.W. of British India, which takes its name from the town of Peshawur. The district lies between lat. 33° 43' and 34° 31' N., and long. 71° 25' and 72° 47' E.; has an area of 1928 square miles, and a population in 1868 of 523,152. Its British military cantonment is in lat. 34° 0' 15" N., and long. 71° 34' 45" E. The town of Peshawur has about 60,000 inhabitants. It is bounded on the north by the ranges which link the Safed Koh to the Hindu Kush, on the west and south by continuations of the same mountains, on the south-east by the Indus, and on the north-east by the

bills of Buner and Swat, Peshawur, down to the time of Akbar, bore its old name of Parashara, under which form it is mentioned by Abul Fazl and Baber, and still earlier by Abu Rihān and the Arab geographers of the tenth century.

Six centuries before Christ, the tribes of Peshawur repulsed an army sent from Persia to collect tribute, which the princes of Hindustan formerly paid, but which had been withheld by Sinkol, then ruler of the country. In the fifth century B.C., they prevented a Rajput sovereign from establishing himself on the Indus. He was named Keda Raja, contemporary with Hystaspes, father of Darius. Subsequently they opposed Alexander in his advance against Porus. One of the rock edicts of Asoka is in the vicinity of Shergarh in Yusufzai. About B.C. 165, Pashpamitra persecuted the Buddhists, and the Greeks reappeared on the Indus, under Menander, king of Bactria. His successor, Eucratides, B.C. 145, annexed to his kingdom the Kabul and Peshawur valleys, with a part of the Panjab and Sind, B.C. 80. Khorasan, Afghanistan, Sind, and the Panjab were united under a ruler of the Saka or Sacæ Scythians. Other Saka tribes and princes followed; but Indian princes of Lahore and Dehli reconquered their Trans-Indus territories of Kabul, Peshawur, etc., which they retained till about the seventh century of the Christian era. In 978 A.D., Jaipal, raja of Lahore, advanced from Peshawur to attack Sabaktagin, governor of Khorasan, under the titular sway of the Samani princes. Jaipal was utterly defeated, and Sabaktagin took possession of Peshawur, which he garrisoned with 10,000 horse.

Peshawur proper is divided into two portions, one lying on the right bank of the Kabul river, and adjoining the Khatak and Afridi hills, which run down to a point at Attock; the other a triangular-shaped tract, of which the two sides are marked out by the Kabul river and one of its tributaries, the Bara, and the base by the Khaibar hills. This is the most highly cultivated spot in the whole valley; in the centre of it stands the city. Its climate is very hot in summer, the thermometer frequently reaching 110° or 112° in the shade. The heat is, however, occasionally mitigated by the breeze from the neighbouring mountains, and as the country, naturally fertile, is well watered by the Indus, the Kabul river, the Bara, and some other streams of less importance, and is, moreover, well cultivated, it is amazingly productive. Scented rice, grown on the banks of the Bara river, is exported, and commands a high price. The district yields iron ore, gold dust, antimony, talc, lignite, and rock-salt. Its present name was given to it by the emperor Akbar, modifying its ancient designation of Parashara. Its position has exposed it to invasions from the west, and it is now enclosed on the north and west by hill tribes of Pathan or Afghan descent, professing Muhammadanism, with democratic institutions, and partly nomadic habits, and pressed for land. The Peshawur population also is mostly Muhammadan (481,447), with 27,408 Hindus, 2014 Sikhs; Gujar, 10,884; Brahmins, 2185; Kabatriya, 6398; Bania, 3444; Arora, 11,957; Mughal, 21,428; Kashmiri, 12,238. The principal clan of the Pathans is the Yusufzai (82,170), who retain all the individual freedom, patriarchal institutions, and jealousy of

personal aggrandizement, which are the original characteristics of the Afghan mountaineers. As soldiers they are not inferior to any of the independent tribes. They are the most martial of all the British subjects on the frontier, and the history of many generations attests their military exploits. Participants in every war that has convulsed the Peshawur valley, and always the recusant subjects of the Sikhs, they literally turned their swords into ploughshares, and became right good lieges of the British.—*Lt.-Col. MacGregor, High Asia*, ii. 548-590; *Aitcheson's Treaties*; *Imp. Gaz.*; *Prinsep by Thomas*; *Records, Govt. of India*. See Panjab.

PESH-IMAM. The Imam in Muhammadanism is a chief, civil or religious. A Pesh-Imam is the leader of prayers in a mosque. The Imams of Muscat is a sovereign ruler. The Shiah believe in 12 Imams, of which the last, Imam Mahdi, is supposed to be still alive, or not yet come. Imam Shafai is one of the four recognised commentators of the Koran.—*Wils. Gloss.*

PESH-KABZ. PERS. A kind of dagger; blade is straight at the back, sloping to a point in front; handle of the bone of a cetacean.

PESHKAR. HIND., PERS. A superintendent; under the Mahratta and Hyderabad governments, an officer of state.

PESH-KASH. PERS. Tribute. In Persia, presents from inferior officers to superiors, something like the reliefs which in Europe during the middle ages vassals had to pay to their suzerain lords. Literally it signifies first-fruits, or rather that which is first extracted.—*Malcolm's India*.

PESH-KHIDMAT, a servant constantly in attendance about the person of his master, particularly while he dresses and takes his meals; nearly answers to the Khidmutgar of India.—*Fraser's Khorasan*, p. 194.

PESHOLA, a lake in Rajputana. The abode of the Hindu deity Sookhdeo, near the Peshola and Oodisagar lakes, is in a deep recess, well wooded, with a cascade bursting from the rock near its summit, under a ledge of which the symbolic representative is enshrined. Around it are several gophas or caves of the anchorite devotees; but the most conspicuous object is a projecting ledge, named Dyte-ka-har, or giant's bone, on which those who are in search of ease jump from above. This is called the Vira-j'hamp, or warrior's leap, and is made in fulfilment of vows either for temporal or future good. Although most of the leapers perish, some instances of escape are recorded.—*Rajasthan*, ii. p. 628.

PESHWA. PERS. A titular term. Peshwa, PERS., meaning preceding, was used by Ala-ud-Din (A.D. 1152) as a ministerial title. It was adopted by the Mahratta rulers, Sivaji and Sumbaji, as a designation of their chief minister, and was retained by the Brahmins, who succeeded to the rule of the Mahratta dominions, until they were finally conquered and set aside in 1818. Siwai Madhu Rao was Peshwa in 1790; Vinaek Rao Bakha Sahib in 1802, and Chimanaji Appa Sahib, 1802. Baji Rao Ragonath was Peshwa in December 1802. He was the son of Ragonath Rao. On the 8d June 1818, he formally abdicated and went to reside at Bithur on the Jumna. He had no son, and adopted Nana Rao, known in the 1857 mutinies as the Nana Sahib.

PESHWAZ.

PESHWAZ. PERS. The courteous act of advancing to receive a guest; the equivalent of the Arabic is *Istaqbal*. The *Murajat* is to accompany on leaving.

PESHWAZ. HIND. of Dehli. A female dress or skirt.

PETA. HIND. Silk thread or wool for weaving.

PETACA, of Manilla, a cigar case made of fine strips of cane. The finest of these cigar cases cost upwards of 50 dollars.

PETERSBURG or St. Petersburg, the metropolis of the empire of Russia. It is seated on the Neva, near the Gulf of Finland, and built partly on some islands formed by the river, and partly upon the continent. Peter the Great first began this city by the erection of a citadel with six bastions in 1703, and in less than nine years the seat of empire was transferred to it from Moscow. The streets are straight, and generally broad and long. The mansions of the nobility are vast piles of building, and the public edifices are of magnificence. Among the ornaments of Petersburg is an equestrian statue of Peter the Great in bronze of a colossal size, the pedestal of which is a huge rock, brought to the spot at a great expense.

PETH. HIND. A market, a bazar.

PETHA. HIND. *Benincasa cerifera*; a gourd used for making sweetmeats; also a sweetmeat made of *B. cerifera* coated with sugar.

PETHAMBARAM, a silk cloth of Benares, Nagpur, Combaconum, and other places. The Benares cloths are highly prized for their superior quality. They measure 12 by 2½ cubits a piece; two pieces make one suit of an upper and under garment. Hindus wear these cloths during their devotional and holiday time. They are sold from Rs. 50 to 350, or even more.

PETHEN. HEB. An adder, Psalm lviii. 4, xci. 19; Deuteronomy xxxii. 24; Job xx. 14, 16. The python snake. See *Serpent*.

PETHURI, or *Pracha amavasya*, takes its latter name from *Prachi*, eastern, and *Amavasya*, new moon. It is a Hindu festival held on the new moon of the month *Shravan*, in honour of the 64 yogini or female attendants of the goddess *Durga*. This is chiefly held by women who have lost infant children, but many Hindu men also engage in the holiday, and purchase sweetmeats and toys. This day falls about the last days of August.

PETITIONS are the usual form adopted by subjects in addressing authorities of eastern countries,—the Arabic, Persian, and Urdu terms being *arz*, *araz*, and *arzi* or *arizan*. In an extreme case, the petitioners of Constantinople and High Asia approach the authority bearing fire on their head. The Afghans explain this to imply that the misery of the petitioner is as great as if he were actually plunged in fire.—*Elphinstone's Caubul*.

PETORAGARH, lat. 29° 36' N., long. 80° 11' E., in Kamaon, about 8 miles west of the Kali. Its fort is 5549 feet above the sea.—*Webb*.

PETREA, the ancient capital of Arabia. Its wonderful remains have been several times described.

PETRIE, WILLIAM, a resident of Madras, who at his own expense erected there the first observatory in the east. He was afterwards a member of the Madras Government.

PETRIFIED WOOD is found in many parts of Southern Asia. Sir W. Johnston gave a notice of that of Ceylon in vol. i. London As. Trans. That

PETROLEUM.

at Trevecaree, near Pondicherry, was noticed by Captain Warren in As. Res. xi. p. 1, and Captain Newbold, in Lond. As. Trans., 1846. Captain M'Murdo gave an account of that in Cutch in Bom. Lit. Trans. ii. p. 110. Of that on the Godavery, Dr. Voisey's account is in Bl. As. Trans., and Dr. Malcolmson's in Lond. Geo. Trans., 1839, p. 566. Captain Vicary's account of that in Sind was given in London Geo. Trans., 1845, iii. Dr. Buist gave an account of a petrified forest near Cairo, in Bombay Times, August 1846. Captain Newbold's account of same is in Lond. As. Trans., 1844, and Prof. Orlebar's account of it in Bombay As. Trans., 1846. A notice of that in the peninsula of Sinai, 4500 feet above the sea, is in Dr. Wilson's Lands of the Bible, i. Petrified wood occurs also on the island of Perim, Gulf of Cambay; and Dr. Nicholson's account of it is in Bom. As. Trans. i. The Perim and Pondicherry wood is full of worm-holes, and seems to have been in a state of extreme decay before petrification. Petrified wood abounds in the districts of Irawadi.—*Dr. Buist's Catal.*; *Yule's Embassy*.

PETROLEUM, Earth-oil.

Neft,	ARAB.	Kesoso no abra, . . .	JAP.
Yai-nan,	BURM.	Minak tanah, . . .	MAHR.
Thi-yu,	CHIN.	Japoo,	SUMATRAN.
Petrole,	FR.	Man tylam,	TAM.
Stein-ol,	GER.	Matti tylum,	TEL.
Matti ka tel, . .	HIND.	Bhoomi tylam, . . .	„

Petroleum, as its name indicates, is an oil-like exudation from rocks, which was employed in medicine in the earliest times, though little used now. It is very abundantly diffused, and in various other forms. It is nearly allied with bitumen on the one hand, and naphtha on the other, between which it occupies an intermediate place, the principal distinction being a difference of consistency and colour. Bitumen in its several varieties, known as mineral pitch, asphalt, pissaphaltum, etc., is solid or nearly so, and black or dark coloured; naphtha is perfectly liquid, and light in colour. Petroleum, earth-oil, or rock oil, is viscid or oily, and greenish or reddish-brown in colour.

At Kafir Kot, it exudes from brown bituminous sandstone, and is usually found floating on the surface of springs; Ratta Hotar hills; at Jabba, a hamlet of Kussan, west of Chakrata, and about 9 miles east of Kalabagh; at Dhadur, 3 miles west of Kabbakhi, in the Salt Range; at Narsinghpur, in the Salt Range; at Jabba, near Nurpur; in the Algad ravine at Kafir Kot on the Indus, and in smaller quantities at some other places. It is a product of the hills on the west side of the Indus, called Tukle Riesar, near Banu and Tank, procurable in the bazar of Dehra Ismail Khan. It is of a reddish colour. In Barbadoes and Trinidad, petroleum is found floating on springs of water; in Britain, as at Colebrooke Dale, etc.; in many parts of Europe; at Baku, on the shores of the Caspian. Springs of it occur near Hit, on the Euphrates, and were noticed by Dr. Winchester in Bom. Geo. Trans. iii. p. 15.

Petroleum has been found at a place called Makoom, a few miles beyond Jeypore on the Debing. Petroleum is very plentiful in Upper Burma. At Yeynan-gyong there are about 160 wells being worked. The daily out-turn is estimated at 15,000 viss. The total yield of these wells is 6,000,000 viss, or 9375 tons per

PETROLEUM.

The total quantity of earth-oil yielded by the wells of Upper Burma is 6,600,000 viss, or 10,312½ tons per annum. There are many abandoned wells, and wells that produce very small quantities of oil. At Pagan there are about 50 wells; they yield daily 1500 viss of oil, which the earth-oil contractors are allowed to purchase. The oil from these wells is obtained in a more liquid state, and more resembles naphtha. It is better suited for lighting purposes than the Yeynangyoung oil.

The town of Yeynangyoung is the centre of a small district in which there are more than five hundred petroleum wells in full activity. The district consists of a sandy loam, resting upon alternate strata of sandstone and indurated clay; under these is a layer of pale blue argillaceous schist, of considerable thickness, impregnated with petroleum, and resting upon coal. The petroleum flows into the well when it is sunk a few feet into the schist, and when it begins to fail the well is deepened. It is remarkable that no water ever penetrates into these wells.

In Cheduba there are 22 wells; in Ramree, 13 wells, each producing two maunds in the season, the aggregate being 70 maunds annually. The produce might be increased some 10 to 20 maunds by digging more wells. The petroleum is thick and dark coloured. It is used for burning, also to pay boats' bottoms, and as a wood varnish. Two wells were said to yield a clear bright fluid.

It occurs at Akyab, Ley Doung, in the Padoung township of the Prome district; at Thayat Myo, and at Khyouk h'pyoo, in Upper Burma; at Pagan and Yeynangyoung; is very abundant at Yeynangyoung, or Earth-oil creek; very abundant in Western China, and also in Sumatra, Sulu Islands, and Japan.

In the island of Cheduba, the method of collecting it is simple. The earth is turned up to a depth of two feet, and a bank of soil, raised round a square of about 20 yards, is distributed so as to form it during the rains into a shallow pond of about the above depth. The surface of this pond is in a constant state of ebullition from the escape of gas, with which comes up the petroleum. It collects on the surface in three different forms. A green fluid oil first spreads itself over the spot where the gas is bubbling up. As it extends, its edges exhibit a brown curdled substance resembling half-congealed dripping; and amongst this, as it becomes thicker, is seen gathering in spots a dark-brown substance of the colour and consistency of treacle. This latter is used to preserve wood, to saturate paper for umbrellas, and is sometimes burned; but the fluid of a green colour is that mostly used to supply lamps. The curdled substance is used with the dark in the coarser purposes to which it is applied. This is the least valuable, and sells at five pots for a rupee; the other two at three pots for 2 rupees. A bamboo is used to skim the surface of the ponds, and bring the substance to the bank; it is scooped up with a cocoanut shell, and put into the pot. It floats so lightly on the water that this process is quickly and effectually performed. The break of the day is the time chosen for the operation, as, from the cooler temperature, it is then of harder consistence on the water, and more easily and cleanly skimmed. In the heat of the day it becomes so fluid as to make it difficult to collect

PETROLEUM.

without a large proportion of the water. In the months of March and April the pond gradually dries up, and the oil can then be no longer collected from out the soil. The pond is then dug, and the whole soil in it is as much disturbed as possible. On this operation depends the quantity to be yielded during the next season, and the deeper it is dug, the larger will be the produce. A sort of superstitious fear is attached to these ponds, and on no account would a native dip his foot in its water, though he will not hesitate to dig the soil when dry, nor to handle its produce, to which no sort of deleterious property is attributed. The state of ebullition, without apparent heat, may occasion this feeling among them. The ponds are surrounded by a rough hedge of stout sticks, to preserve them from the intrusion of buffalo or deer. Insects were seen in them. No heat is perceptible at the surface, the thermometer where the greatest ebullition was going forward showing but 2° more than the atmosphere, viz. 74°. No doubt this mineral product might, with ease and little expense, be increased to a very large amount; and the oil has yet perhaps to be better known and better appreciated than now, when its value will in all probability be much increased. Britain imports 59½ million gallons.

The production of crude oil in the United States has very largely increased, the daily average yield being estimated at 45,000 barrels. The local consumption of refined oil in the United States was over 3,000,000 barrels per annum. In 1879, China, Japan, Java, etc., took 600,000 barrels, against 185,000 barrels in 1877. The accumulated stock of crude oil in the United States at one period (June to August) reached the enormous total of 5,000,000 barrels. The total shipment from the United States to all parts of the world was 321,829,050 gallons, against 329,178,800 gallons in 1877, and 221,710,049 gallons in 1876.

It serves for lamps, and, mixed with ashes, answers the purposes of fuel. It is a good wood varnish. A composition of petroleum and resin is an excellent material for covering wood-work and for paying the bottoms of ships and boats, as it protects the timber from the attacks of worms and insects. When rectified by distillation, it affords naphtha. Candles are made of paraffin, a substance obtained by Mr. Warren De La Rue's process from Burma petroleum, and also produced by distillation of coal and other minerals of disputed relationship to coal. Paraffin oil, obtained by the distillation of petroleum, of coal, etc., is a lubricating oil of much value for machinery of all kinds, as it does not injuriously affect brass or other metals. At Baku, on the shores of the Caspian Sea, a petroleum locality, the viscid mineral is rolled up into balls, with earth, forming a fuel in a convenient form. At the same place, and at many others, petroleum is used for coating the flat roofs of houses. In the Trans-Indus, Northern Derajat, etc., it is the common application for sores on the backs of camels. Momyai is a black substance, principally clay, which, however, burns feebly, and softens slightly to the flame of a lamp, giving out a peculiar empyreumatic odour. It is the osteocolla of native medicine, and is, when genuine, of very high price, and its use solely medicinal. The specimens purchased often consist of solidified mineral tar,

PETROMYZONTIDÆ.

or still oftener of lignite. Petroleum has been discovered in many places and in great abundance, selling in London in 1883 at 6d. the gallon, and has led to a great diminution in the number of whalers.—*Captain Cox in As. Res.* vi. p. 127; *Dr. Winchester in Bom. Geog. Tr.* iii. p. 115; *Captain Halsted in Beng. As. Trans.*, 1841; *Capt. Hannay; Jury's Reports Ex.; Honigberger*, p. 322; *Royle's Mat. Med.; Smith's Mat. Med.; Powell*, p. 20; *Mason's Tenasserim; Yule's Embassy*.

PETROMYZONTIDÆ, a family of fishes of the sub-class Cyclostomata, as under:—

SUB-CLASS v. Cyclostomata.

Fam. I. Petromyzontidæ.

Mordacia mordax, *Rich.*, Tasmania, Valparaiso. *Gastrea Australis*, *Gray*, S. Australia. *Chilensia*, *Gray*, Chili, Swan River, New Zealand.

Fam. II. Myxinidæ.

Bdellostoma cirrhatum, *Forst.*, S. Africa, Japan, New Zealand.

PETROSELINUM SATIVUM. Hoffm.

Apium petroselinum, *Rozb.*

Bilati Pitursilii, . *BENG.* | *Petergallion*, . . . *Gr.*
Common parsley, . *ENG.* | *Pitar saleri*, . . . *HIND.*

Parsley, one of a genus of plants belonging to the natural order Umbelliferae.—*Hogg*, p. 382.

PETTAH, properly Pettai, among the Tamil people, a suburb, a town contiguous to a fortress, but distinct from it, and usually separately fortified. The term is also applied to a village near a town in which a fair or market is held. In the latter sense it is doubtless the same as the Gujarati, Hindi, and Mahrati, Peth, Pent, or Penth, a market or bazar, or part of a town where there are shops, or a trading or manufacturing town. There are few large towns of Southern India without a pettah, but several places of considerable size, as Ranipet, Lal-pet, Mir-sahib petta, have this termination, which betokens their rise to have been a clustering of traders under the protection of a fort.

PE-TUN-TZE, the Chinese name for a white mineral used with kaolin in the manufacture of porcelain. Kaolin is said to be derived from the decomposition of the felspar of granitic rocks. Pe-tun-tze is the same mineral which has not suffered decomposition, and on account of its fusibility it is employed in glazing the porcelain.—*Eng. Cyc.*

PEU. *Tib.* A carbonate of soda, found all over Dingcham and Tibet, south of the Yaroo; it appears as a whitish powder on the surface of the soil, never in masses under ground. It is not used to make soap or otherwise in the arts; a small quantity is always put into the water with tea; it is considered to improve the flavour, and it gives a high brown colour to the decoction. It is generally used in medicine.

PEUCEDANUM CACHRYDIFOLIUM. *Led.* A valuable fodder herb of Persia. *P. graveolens*, *Benth.*, is the Anethum grav., *Linn.*, common dill. *P. sativum*, *Benth.* (*Pastinaca sativa*, *Linn.*), is the parsnip. *P. sekakul*, *Benth.*, a biennial of Egypt and Syria; its root is edible.—*Von Mueller*.

PEU RA, the Tibet goat, small, hairy, of all colours. Has an under coat of fine wool, similar to the shawl-wool, but there is no shawl-wool trade from Eastern Tibet to India at present. Flesh pretty good.

PEWAN. *HIND.* Two small flat pieces of stoneware or porcelain, used by fine wire-drawers

PHALANGISTA MACULATA.

to grind the point of a wire between, so as to be able to insert the point in the plate.

PEWAND. *HIND.* A graft. Pewandi, any graft tree.

PEWTER.

Risaa,	ARAB.	Stagno,	It.
Sih,	CHIN.	Olowo,	Rus.
Etain,	FR.	Estano, Peltre, . . .	Sr.
Zinn, Zinngesserzin, GER.			

A compound metal, made of four parts of tin and one of lead; a finer kind consists of tin mixed only with a little antimony and copper. It is used in making plates, dishes, spoons, and such other domestic articles.—*M'Culloch*, p. 900.

PHÆNICOPHAINÆ, a sub-family of birds of the family Cuculidæ. *Phænicophaeus callirhynchus*, of Celebes, is one of the finest known cuckoos. Its bill is of a brilliant yellow-red and black.

PHÆTON, a genus of birds of the family Phætonidæ. *P. candidus* and *P. rubricauda* occur in India.

Phæton æthereus, *Blyth*, or red-tailed tropic bird, is by seamen called the 'boatswain,' from the long tail-feather, which they call a marlin-spike. They are seen 700 and 800 miles from land. *Phæton candidus*, *Brisson*, is the white tropic bird of tropical seas, Bay of Bengal to Mauritius.—*Collingwood*. See Birds.

PHAG or Phagu. *HIND.*, *URIYA*. The red powder which Hindus throw over each other at the Holi festival.

PHAGWA. *HIND.* The hot wind of N.W. India. It blows in March.

PHAILWAN. *HIND.* A wrestler. In ancient writings, applied to a hero of romance, such as an Amadis de Gaul, etc., who performs feats of wonderful or superhuman prowess. But of late it has been used to wrestlers, prize-fighters, and bullies, as well as persons of great strength and courage.—*Fraser's Khorasan*, p. 376.

PHAK. *Tib.* Pig, two varieties,—the Lho phak, or southern pig, which is most abundant to the south of Lhasa, and is described as similar to the Indian village pig; and the small China pig, now abundant in Lhasa and other towns. No wild hogs anywhere in Tibet. The Chinese butchers in Lhasa blow their pork, and take in the country folks greatly by its fine appearance.

PHAKI or Phakial, a Shan race settled on the Dihing river. See Shan.

PHAL or Phala. *HIND.* A ploughshare, a blade, an arrow-head. A frame used in the threshing-floor.

PHALACROCORACIDÆ of Bonaparte, the Graculidæ of other naturalists; a family of the fishing birds.

PHALÆNA PATROCLUS. *Linn.*, *Cramer*. A well-known splendid moth, common in collections from Burma, China, Assam, and Sylhet.

PHALHA. *HIND.* Lawful food for Hindus on their birth or fast days, such as buckwheat and some pulses.

PHALANGISTA MACULATA is as big as a cat, has a long snout; large, round, protuberant eyes; yellow and brown spotted skin; long tail, covered with hair on the upper part, but bare on the lower part and at the end. With its tail it fastens itself in climbing, and rolls it up when running. The female has a yellow skin, with long soft hairs, but without spots, and has a pocket under the belly, formed by a fold in the

hide, into which the hand can be inserted. She carries her young in it, hanging on the nipples, until they have grown strong enough to leave this shelter. *P. vulpina* is the vulpine phalanger or opossum of Australia, and *Belideus breviceps* is the short-headed phalanger. Phalangiers of Australia climb expertly, living on leaves, buds, and fruit, though in some cases more or less carnivorous, remaining concealed during the day in the hollows of the trees, and at night seek for food among the branches.—*Ind. Arch.* June 1852.

PHALANGUM BISIGNATUM, a long black-legged spider of Ceylon, with a tiny white body; in the high country it congregates in groups of from 50 to 100 in hollow trees. In the low lands they are not gregarious.—*Tennant's Ceylon*.

PHALARIS CANARIENSIS. *Linn.* Canary grass, but growing now in many countries, for its seeds are the best kind of food for small birds; its flour is made into cakes.—*Von Mueller*.

PHA-LAUNG. *Burm.* Tadpole; in Arakan, a term of abuse of the British.

PHALGUNA or Phalgun, the 11th month of the Hindu year, is one of the Hindu months of spring or Vasant. At Udaipur the merry month of Phalgun was ushered in with the ahairee or spring-hunt. The preceding day, the rana used to distribute to all his chiefs and servants either a dress of green or some portion thereof, in which all appear habited on the morrow, whenever the astrologer has fixed the hour for sallying forth to slay the boar, to Gouri, the Ceres of the Rajputs; the ahairee is therefore called the Muhurut-kashikar, or the chase fixed astrologically. As their success on this occasion is ominous of future good, no means were neglected to secure it, either by scouts previously discovering the lair, or the efforts of the hunters to slay the boar when roused. As Phalgun advances, the bacchanalian mirth increases; groups are continually patrolling the streets, throwing a crimson powder at each other, or ejecting a solution of it from syringes, so that the garments and visages of all are one mass of crimson. On the 8th, emphatically called the Phag, the rana joined the queens and their attendants in the palace, when all restraint is removed, and mirth is unlimited. But the most brilliant sight is the playing of the Holi on horseback, on the terrace in front of the palace. Each chief who chooses to join has a plentiful supply of missiles, formed of thin plates of mica or talc, enclosing the crimson powder called abira, which with dexterous horsemanship they dart at each other, pursuing, caprioling, and jesting. This part of it much resembles the Saturnalia of Rome of this day, when similar missiles are scattered at the Carnival. The last day, or Poonim, ends the Holi, when the nakarra drums from the Tripolia summon all the chiefs with their retinues to attend their prince, and accompany him in procession to the Chougan, their Champ de Mars. In the centre of this is a long sala or hall, the ascent to which is by a flight of steps; the roof is supported by square columns without any walls, so that the court is entirely open. The festival of Holi, more classically called Hulica, otherwise Phalgutsava, meaning the festival of Phalgun, as occurring in the month of that name, commences about the full moon, at the approach of the vernal equinox. It is one of the greatest festivals among the Hindus, and almost all sects seem to partake in

its festivities; and all ranks, from kings downward, appear animated by the season, which is peculiarly dedicated to Krishna. Images of this deity are then carried about in palkees, and on elephants, horses, etc., attended by music and singing and various antics. People of condition receive numerous visitors, who are entertained with dancing girls, music, singing, betel, and rose-water. An annual festival to celebrate the birth of this god is held in the month Bhadra. On this day his worshippers fast, but on the conclusion of the worship indulge themselves in music, dancing, singing, and various other festivities. In the month Sravana another festival is held in his honour, which lasts from three to five days, during which the same festivities prevail; to which is added the ceremony of swinging the image of the god in a chair suspended from the ceiling. In the month Kartika, a third festival takes place, to celebrate his revels among the Gopia; and in the month Phalgun is also held the celebrated festival of the Dola, the ceremonies of which last fifteen days, and are accompanied with great splendour and festivity. During these holidays, the Hindus of Northern India spend the night in singing and dancing, and wandering about the streets, besmeared with the dola (a red) powder; in the daytime, carrying a quantity of the same powder about with them, which, with much noise and rejoicing, they throw over the different passengers they may meet in their rambles. Music, dancing, fireworks, singing, and many obscenities take place on this occasion. The Rev. Mr. Ward says:—'At these times, the grey-headed idolator and the mad youth are seen dancing together, the old man lifting up his withered arms in the dance, and giving a kind of horror to the scene, which idolatry itself, united to the vivacity of youth, could scarcely be able to inspire.' Krishna is also worshipped under his infant form as Gopala and Bala-gopala, and again as Gopi-natha, the god of the milkmaids. In the picture of Krishna, observes Sir William Jones, it is impossible not to discover at the first glance the features of Apollo, surnamed Nomios or the pastoral in Greece, and Opifir in Italy, who fed the herds of Admetus, and slew the serpent Python.—*Tod's Rajasthan*, i. p. 567.

PHALLUS. *Gr.* The priapus of the Romans, and the lingam of the Saiva Hindus. It is mentioned in Ezekiel xvi. 17 and Amos v. 26. Colonel Tod says that no satisfactory etymology has ever been assigned for the Hindu name of the phallic emblem. He supposes that it may be from the same primeval language that formed the Sanskrit. Phalisa, he adds, means the 'fructifier,' from Phala, fruit, and Isa, the god. Thus the type of Osiris can have a definite interpretation, still wanting to the lingam of Siva. Both deities presided over the streams which fertilized the countries in which they received divine honours. Osiris, over the Nile, from the mountains of the Moon in Ethiopia; Siva, over the Indus (also called the Nil) and the Ganges, from Chandragiri, 'the mountains of the moon,' on a peak of whose glaciers he has his throne. The Greeks, who either borrowed it from the Egyptians, or had it from the same source, typified the fructifier by a pine-apple, or, as others say, the fir-cone or date-seed, the form of which resembles the Sitaphala or fruit of Sita, whose rape by Ravana carried

PHALSA.

Rama from the Ganges over many countries ere he recovered her. In like manner, Gouri, the Rajput Ceres, is typified under the coconut or Sripala, the chief of fruit, or fruit sacred to Sri or Isa (Isia), whose other elegant emblem of abundance, the camacumpa, is drawn with branches of the palmyra or cocoa-tree, gracefully pendent from the vase (Cumbha). The Sripala is accordingly presented to all the votaries of Siva and Isa on the conclusion of the spring festival of Phalguna,—the Phagesia of the Greeks, the Phamenoth of the Egyptians, and the Saturnalia of antiquity,—a rejoicing at the renovation of the powers of nature, the empire of heat over cold, of light over darkness.—*Rajasthan*, i. 539; *Tr. of Hind.* i. 265. See Balanus; Liugam.

PHALSA. HIND. *Grewia Asiatica*. Phalsi, a sherbet prepared from its fruit.

PHANGA or Phunge. BENG. A species of *Gryllus*, a voracious feeder on young poppy plants.

PHANGAN, a pass which leads to Man-chi in China, occupies a little more than a month on its journey, and leads over mountains 6000 to 8000 feet high. The Patkoi pass, from Bamo and China, was the route followed by the Burmese in their invasions of Assam, and is the means of communication between the Singpho tribes on the north and south of the Patkoi mountains. The passes through Assam are along the Dihing route into Tibet, the northern banks of the Lohit, and through the Mishmi hills into Tibet, called the Mishmi route.

PHANSI. HIND. Hanging. Phansigar, a robber, a strangler, an executioner.

PHAO. HIND. of Lahoul. A kind of spirit which is put into the mixture called lugri, when the fermented materials are placed in the still. Phap, a ferment for beer, etc.—*Powell*.

PHAPHOR. HIND. A kind of morel in the Jhang district. *Urginea Indica*, one of the Liliaceae.

PHAPRI. HIND. Thin biscuits. Phapri or Phapra means any thin shell-like substance.

PHARA. MAHR. A measure of capacity for grain or salt. That of salt is equal to 10½ adhali.

PHARAOH, a title of rulers in Egypt in the time of Moses, rendered famous among all nations who follow the Hebrew, the Christian, or Muhammadan faiths. One of the Pharaohs is said to have followed the Israelites, and been drowned in the Red Sea. At Suez, after a north-westerly breeze has been blowing some time, the water recedes; and should it be followed by a south-east wind, it rises very suddenly, sometimes as much as six feet, and renders the ferry, situated about a mile and a half to the northward of the town, impassable. At a sitting of the French Academy, M. Lesseps stated, upon the authority of the report made by his engineers, that 'at the time the Israelites left Egypt under Moses' leadership, the ebb and flow of the tides of the Red Sea reached to the foot of the Saragaim, near Lake . . . If this be correct, it follows that the spot where the Israelites crossed the Red Sea was situated not to the south, but to the north of the present extremity of its northern arm. The term Pharaoh is derived from Per-aa, the great house or court, analogous to the Turkish title of Bab-ul-Maqaddas, or Sublime Porte.—*Wellsted's Tr.* ii. p. 42.

PHASEOLUS.

PHARBITIS NIL. Choisy.	
<i>Convolvulus nil</i> , Linn.	<i>Ipomæa coerules</i> , Koern.
<i>Ipomæa nil</i> , Roth.	Roxb.
Hub-ul-nil, . . . ARAB.	Kala-dana, . . . HIND.
Phaproot sag, . . . BEAR.	Mirchai, . . .
Nil-kalmi, . . . BENG.	Bildi, . . . JHELM.
Kirpawa, . . . CHEN.	Ker, Kirpawa, . .
Kien-niu-taze, . . CHIN.	Aishk-pecha, . . . PERS.
Inflation, . . . GR.	

This plant, one of the Convolvulaceae, grows in all tropical countries; and throughout India its seeds are used as a purgative, but are irregular in their operation. They are roasted slightly and powdered, and the dose is 30 to 40 grains. A cathartic oil is obtained from the seeds. The variety *P. nil*; β *coerulescens*, Roxb. Flowers large; in the morning of a pale blue, gradually growing darker.—*Voigt*; *Birdwood*; *Irvine*; *Honigberger*; *Dr. Stewart*.

PHARBITIS PURPUREA.

<i>P. hispida</i> , Choisy.	<i>C. discolor</i> , Roxb.
<i>Convolvulus purpureus</i> , Linn.	<i>Ipomæa purpurea</i> , Linn.
<i>C. mutabilis</i> , Sales.	<i>I. hispida</i> , Zucc.
<i>C. glandulifer</i> , Spr.	<i>I. Zuccagni</i> , Rom.
	<i>I. glandulifera</i> , Ruiz.

Var. *a. purpurea*, *C. purpureus*, light purple.

„ *b. violacea*, violet flowers.

„ *c. elata*, *C. purpureus*, var. *elatiore*.

„ *d. varia*, *C. purpureus*, var. *varius*.

„ *e. leucantha*, white flowers.

A plant of America, cultivated in gardens.

PHARFURA, a fine enamelling on the back of jewelled ornaments, done at Jeypore, etc.

PHARID-BUTI. HIND. A mucilaginous plant found at Ajmir; used in sherbets.—*Gen. Med. Top.* p. 149.

PHARISÉE, from Pharaoh, set apart. Hebrew reformers after the seventy years' captivity.

PHARNACEUM MOLLUGO. Ghimasag, HIND. Ladies' bedstraw; wild in gardens during rains; sometimes used as a pot-herb; said to have medicinal properties.—*Gen. Med. Top.*

PHARNAVIS, a public officer under the Marhatta government; the keeper of public registers, through whom all orders or grants were issued. Corruptly, Furnavis.

PHASEE. URIYA. A tree of Ganjam and Gumsur, of extreme height 60 feet, circumference 6 feet, and height from the ground to the intersection of the first branch, 30 feet. A light, hard wood, used for sugar-presses, rice-pounders, and baidy wheels, and occasionally for making boats of. It is tolerably plentiful.—*Captain Macdonald*.

PHASEOLUS, a genus of plants of the natural order Fabaceae, the bean tribe. The East Indian species are as under:—

- P. acontitifolius*, Jacq., all India.
- P. aureus*, Roxb., cultivated.
- P. angustifolius*, Roxb., China.
- P. calcaratus*, Roxb., Mysore.
- P. caracalla*, L., W. Indies, introduced.
- P. coccineus*, Kniphof.
- P. dolichoides*, Roxb., Chittagong.
- P. fuscus*, Wall., Promé.
- P. glaber*, Roxb., Mauritius.
- P. lunatus*, L., all India.
- P. minimus*, Roxb., China.
- P. mungo*, L., cultivated.
- P. multiflorus*, L., cultivated.
- P. nanus*, L., cultivated.
- P. radiatus*, Linn., Peninsula of India.
- P. rostratus*, Wall., cultivated.
- P. Roxburghii*, W. and A., all India.
- P. semierectus*, L., W. Indies, introduced.
- P. sublobatus*, Roxb., Bengal.

PHASEOLUS.

P. trilobus, *Ait.*, all India.

P. torosus, *Roxb.*, Nepal.;

P. vulgaris, *L.*, all India.

Phaseolus aconitifolius, *Jacq.*

Dolichos dissectus, *Lam.*

Mat, Mash, Moth,	HIND.	Mohae,	SIND.
Adas,	PERS.	Tulka-pyr,	TAM.
Vasanta,	SANSK.	Kuncuma-pesalu,	TEL.

Grown as fodder throughout the Peninsula and in Upper Provinces of India; in 100 parts—

Moisture,	11.22	Fatty or oily matter,	0.64
Nitrogenous matter,	23.80	Mineral constituents,	3.56
Starchy matter,	60.78		

This dwarf plant has a small, pleasant-tasted pulse, much cultivated in the higher provinces of India. When split, it forms one of the 'dal,' and, ground into flour, is made into bread by natives, and sometimes used mixed with wheat-flour. Bullocks, sheep, goats, and many of the native cavalry horses are fed on it. Two varieties are cultivated, white and black. Price, 22 seers per rupee. Its roots, as well as those of *P. radiatus*, are said by Royle to be narcotic.—*Ainslie*.

Phaseolus adenanthus, *G. Meyer*.

P. truxillensis, *Humboldt*. | *P. rostratus*, *Wallich*.

Cultivated for its seeds. A variety with edible roots occurs.—*Von Mueller*.

Phaseolus angulatus, *Luh-tau*, *CHIN.*, a plant of China.

Phaseolus aureus, the Sona Mung of Bengal, is cultivated in Bengal. Sown about the end of October or beginning of November, and reaped in February or the beginning of March.

Phaseolus coccineus, *Kniphoj*; *P. multiflorus*, *Willdenow*. The scarlet runner; a twining, showy plant, perennial, as useful as the ordinary French bean. The root contains a narcotic poison.—*Von Mueller*.

Phaseolus lunatus, *Linn.*

P. maximus, *Sloane*. | *Bun-burbutie*, BENG.

This is the country French bean, country haricot bean, Lima bean, and Duffin bean of India. Sown in rows the same as other beans, but with a much greater space between; they require very strong sticks for support, and are ready in about six months. No very particular care is necessary. This is a most valuable bean, much prized by the European inhabitants of India, by some of whom it is preferred to the Windsor bean. It was originally brought to India from Mauritius, and is extremely prolific.

Phaseolus mungo, *Linn.*, green gram.

Var. a. chlorospermum. | *P. hirtus*, *Retz*.

Hali moong,	BENG.	Danie masha,	SANSK.
Hessaru,	CAN.	Ulandu,	TAM.
Hu-tau,	CHIN.	Wudalu,	TEL.
Urad,	HIND.	Pacha pesalu,	"
Mung,	MAHE.		

This very pleasant-tasted pulse is much prized, dressed in various ways, boiled, or ground to flour. It is of great value whenever the periodical rains fail and rice cannot be grown, and famine is the consequence; in 100 parts—

Moisture,	11.5	Fatty or oily matter,	1.29
Nitrogenous matter,	24.12	Mineral constituents	
Starchy matter,	29.87	(ash),	3.6

It is commonly cultivated in the Panjab plains, and to 8500 feet in the hills, and its pulse is considered nutritious and digestible. It will keep good for about three years if carefully preserved by packing it in parcels. Of the Indian pulses, it fetches the highest price, and its small seed is

PHASIANIDÆ.

in great request for delicate dishes and cakes. It is cultivated up to 6000 feet; the harvest is thirty-fold. Colonel Sykes counted 62 pods on one plant, with from 7 to 16 seeds on each.

Phaseolus max, *Roxb.*, black gram.

Var. β. melanospermus, black seeds.

Mash,	ARAB.	Benu mash,	PERS.
Kalo moog,	BENG.	Masha,	SANSK.
Krishna moog,	"	Bu-mæ,	SINGH.
Chicuda,	CAN.	Karpa-ulandu,	TAM.
Kali urad,	HIND.	Nalla wudalu,	TEL.
Kali moong,	"	Nalla pesalu,	"
Wuddu,	MALEAL.	Karpa, Minomolu,	"

This pulse is grown in the Sutlej valley between Rampur and Sungnam at an elevation of 6000 feet. The seeds are both black and green. It differs but little from the common ulundu, *P. mungo*, except that it is of a darker colour and somewhat larger. The Moong of the natives and black gram of the English is like *P. mungo*, but distinguished by its black seeds, and is, like it, found in a cultivated state; it takes about the same time to ripen, and yields nearly the same produce. It is a common pulse in Burma.

Phaseolus radiatus, *Roxb.*, is *R. Roxburghii*, *W. and A.*, the Mash-kulay of all India. It also has a green and a black seeded variety. It is the most esteemed of all the leguminous plants.

Phaseolus rostratus, *Wall.*, *W. and A.*

<i>Ph. alatus</i> , <i>Roxb.</i> , <i>Rh.</i>	<i>Ph. amarus</i> , <i>Roxb.</i>
Bun burbuti,	Karalsana, 'TEL.
Hullunda,	Karu alachanda, "
Katon paira,	MALEAL.

This species is grown in the Circars and in Malabar, where the tuberous roots are eaten; other parts of the plant are used in medicine.

Phaseolus trilobus, *Ait.*, *Roxb.*

<i>Glycine triloba</i> , <i>Linn.</i> | <i>Dolichos stipulaceus</i> , <i>Lam.</i>	
<i>Dolichos trilobatus</i> , <i>D.C.</i>	
Mugani,	BENG. | Kulæe, Trianguli, HIND.
Three-lobed bean,	ENG. | Pilli pesara, TEL.

This species of *Phaseolus*, sown like any other beans, grows spontaneously everywhere in the Tenasserim provinces. Roxburgh says he never found it but in its wild state; Voigt says the leaves are alleged to be tonic and sedative, and are used in cataplasms to weak eyes. Cultivated in the Peninsula of India and in Bengal, and its seeds are eaten by the poor. In China, its root is eaten, though slightly noxious if not thoroughly cooked, and a kind of arrow-root is prepared from the root.—*Mason*; *O'S.*; *Smith*.

Phaseolus vulgaris, *Linn.*

Lobiya, Bakla, HIND. | Dambala, SINGH.

French bean, kidney bean, haricot bean, native of Kābul and Kashmir, said to be a native of India; but Dr. Royle states that seeds were brought to him from Kashmir, and he was therefore inclined to consider that it was introduced into Europe from the most northern parts, such as Kābul and Kashmir, and that this accounts for their being able to cultivate it at a lower temperature than other species of the genus. The meal is twice as nutritious as that of wheat. *P. nanus*, *Linn.*, and *P. tumidus*, *Savi*, sugar, sword, or egg bean, are varieties of *P. vulgaris*.—*Von Mueller*; *Eng. Cyc.*; *Voigt*; *Ainslie*; *Roxb.*; *Royle*; *Cleg-horn*; *Mason*; *Jaffrey*.

PHASIANIDÆ, the pheasant family of birds, comprises the pea-fowl, pheasants, jungle-fowl, and spur-fowl, all of them peculiar to Asia, India,

PHASMA.

Burma, and Malaya; some authors include also the turkeys. They frequent forests, jungles, and thick coverts, perch and roost on trees:—

Sub-Fam. Pavoninae, Pea-fowl.

Pavo cristatus, Linn., common peacock.
P. japonensis, Japan peacock.
P. muticus, Linn., Burmese peacock.
Polyplectron tibetanum, Assam to Tenasserim.
P. bicalcaratum, Linn., Malacca, Sumatra.
P. napoleonis, Hume.
P. chalcurus, Temm.
Argusanus giganteus, Temm., Malay Peninsula, Arohi-pelago.

Sub-Fam. Phasianinae, Pheasants.

Lophophorus impeyanus, Latham, the monal, Himalaya.
Crossoptilon aurtum, Pallas, snow pheasant.
C. tibetatum, Hodgson, snow pheasant.
Cerionis satyra, Linn., Sikkim horned pheasant.
C. melanocephala, Gray, Simla horned pheasant.
C. temminckii, Gray, China.
C. caboti, Gould, China.
Ithaginis cruentus, Hardw., green blood pheasant, Bhutan, Sikkim.
Pucrasia macrolophus, Less., Purkas pheasant.
P. castanea, Gould, North-west Himalaya.
Phasianus wallichii, Hardw., Cheer pheasant.
P. colchicus.
P. torquatus, —? ring-necked pheasant of China.
P. mongolicus, Gould.
P. versicolor, Vieillot, Japan.
P. reevesii, Gray, China.
P. soemmerringii, Temm., Japan.
P. lineatus, Lath., silver pheasant of Burma.
Thaumalea picta, —? China, Central Asia.
T. amherstiae, Leadbeater, North China, Manchuria.
Gennaeus nycthemerus, Gould, silver pheasant of Himalaya.
Gallopheas albocristatus, Vigors, white-crested Kalij pheasant.
G. melanotus, Blyth, Sikkim, the Kalij pheasant.
G. horsfieldii, Gray, Assam, Tiperah, Chittagong.
G. lineatus, —, Assam, Burma.

Sub-Fam. Gallinae, Jungle-fowl, Firebacks, Black Pheasant.

Diardigallus prelatius, Bonap., Siam.
Gallus ferrugineus, Gmelin, red jungle-fowl.
G. sonneratii, Temm., grey jungle-fowl.
G. stanleyi, Gray, Ceylon.
G. fuscatus, Temm., Java.
G. renes, Temm., Batavia.
Gallopheas spadiceus, Gmelin, red spur-fowl.
G. lunulosus, Valer., painted spur-fowl.
G. zeylonensis, —? Ceylon.

The genus *Phasianus* is higher up the Himalaya slopes than the *Gallopheas*, and the *Gallus* is still lower. *Phasianus colchicus* and the Chinese *P. torquatus* readily intermix and blend, wherever the latter has been introduced in Europe. *Phasianus colchicus*, the common pheasant, was originally from Asia Minor. *P. torquatus* came from Shanghai about the middle of the 18th century; *P. mongolicus* from Mongolia, *P. soemmerringii* from Japan, *P. reevesii* from China, and *P. versicolor* from Japan. See Pheasant.

PHASMA, a genus of the Phasmidæ, inoffensive leaf-eating insects of very varied forms, some being broad and leaf-like, others long and cylindrical, so as to resemble sticks, whence their common name, walking stick insects. The larger wingless Phasmidæ are 8 to 12 inches long, and as thick as the finger. They are abundant in the Moluccas, hanging on the shrubs that line the forest paths, and they resemble sticks so exactly in colour and other parts, as to render their detection impossible. The wings of those provided with them are often brightly coloured. The

PHEASANT.

genera *Phasma* and *Mantis* often escape observation from their resemblance to grass and brown twigs. The Phasmidæ are found in Asia, Africa, S. America, and Australia, and from their varied shapes are called spectres, phantoms, devils, horses, soldiers of Cayenne, walking leaves (Phyllum), animated sticks, etc. About 600 species of Phasmidæ have been described. Their whole colouring, form, rugosity, and the arrangement of the head, legs, and antennæ, are such as to render them absolutely identical in appearance with dead sticks and bits of withered grass and leaves, and they have the extraordinary habit of stretching out their legs unsymmetrically, so as to render the resemblance complete. *Ceroxylus laceratus* of Borneo is covered over with foliaceous excrescences of a clear olive-green colour, so as exactly to resemble a stick grown over by a creeping moss or gungermannia. The Dyak who brought it said it was grown over with moss although alive, and only a most minute examination convinced that it was not so.

PHEASANT birds belong to the family Phasianidæ. Gold and silver pheasants are inhabitants of China; but the golden pheasant, according to M. Temminck, inhabits not only China and Japan, but the northern parts of Greece, as also Georgia and the Caucasus, and has been met with even in the province of Orenburg. M. Degland tells us that M. Gamba, French consul at Tiflis, met with this gorgeous bird in numerous flocks on the spurs of the Caucasus which extend towards the Caspian Sea, and that now it has gone wild and multiplied in some of the forests of Germany. The golden pheasants inhabit no part of the plains of India, nor does any kind of pheasant inhabit south of the Himalaya in British India.

Dr. Adams, close to the melting snow, came on several flocks of the great snow-pheasant, known to the Kashmiri by the names Gor-ka-gu and Ku-buk-deri. It is also called Lepia and Jermonal in other districts westward. This species seems to frequent the high ranges of Afghanistan, and suitable situations all over the great Himalayan chain. There are three allied species, one of which is possibly only a local variety (*Tetraogallus tibetanus*); the other two are decidedly distinct. One of the latter is said to frequent the Ladakh mountains; it has a band on the front of the neck like the chukor. He saw a flock of snow-pheasants together with quoir monal or snow-partridge (*Lerva nivicola*). This handsome bird is not uncommon in certain localities and at high altitudes on Kashmir, Ladakh, and northwards. The snow-partridge breeds near the limits of vegetation, and lays from six to seven eggs.

The black-headed or Hasting's pheasant (*Cerionis melanocephala*, Gray) is found on the wooded slopes of the Pir Panjal. It is one of the gayest, and at the same time largest of its family. From the brilliancy of its plumage, it has been designated by Europeans the argus pheasant; but the true argus is a native of Sumatra and the Malayan Peninsula. The most common local name for this species, besides the above, is Jewar. In some parts of the Kashmir ranges, the male is called Sonalu, and the female Selalee. Its close ally, the Sikkim horned pheasant (*C. satyra*), has not been met with on the North-Western Himalaya. Oft, in the stillness of an alpine solitude, at his

tent door, by the cheerful log-fire, Adams listened to the well-known Wa, wa, aw, of this bird. The loud wailing cry of the jewar sounds mournfully along the valleys, and is more often heard at dusk and break of day than at any other time.

Foremost of all the various species of pheasants stands the Impeyan, or monal (*Lophophorus impeyanus*). This splendid bird, once so abundant in the Western Himalaya, is now, comparatively speaking, restricted to certain localities in the wooded slopes of the higher ranges. Whole tracts of forests, once dazzling with the gorgeous forms of these birds, are now without a single specimen. It will, however, be long before it is extirpated, for its haunts are high up among the craggy rocks, where few ordinary sportsmen venture. The average weight of an adult male monal is nearly 6 lbs.; that of the female, about 5 lbs.; the young of the year, about 3 lbs. Its favourite haunts are in the deepest solitude of the forest, or among the bamboo and dense jungle which clothe the sides and bottoms of the valleys. It is found along the line of the Himalaya, from 6000 to 8000 or 10,000 feet, but is partial to localities. It is strictly alpine in its haunts, and prefers the cooler regions of the middle ranges to the forests bordering on the plains of India. They are bought chiefly to adorn ladies' bonnets. Its favourite food consists of acorns, earth-nuts, bulbs, wild strawberry, currants, etc. They may be met with in scattered flocks, singly, or in pairs. The female monal lays four to six eggs, very similar in colouring to those of the turkey. The young bird has the dark-brown plumage of the female until the autumnal moult. About Mussoori and Simla, Monal is the name; to the eastward it is called Ratteah cowan and Monalee. The male is the Lout and the female the Ham of the Kashmirians, who adorn their mosques with the brilliant feathers of the male.

The plach pheasant, known by the local names Pukras, Coclass (*Pucrasia macrolopha*), is less plentiful, and does not appear to be so generally distributed as the monal.

The cheer pheasant (*Phasianus Wallichii*) is one of the most elegant in the Himalaya. It is likewise known by the local names of Buinchil and Herrel. The male measures about 18 inches, exclusive of the tail, which varies from 20 to 26 inches in length. The naked skin around the eye is bright red. The iris is light brown. The tail is composed of eighteen feathers, which graduate in pairs, and are broadly barred with pale yellow or dusky brown and olive blotches. The cheer frequents the lower and middle regions, and is seldom found at very high elevations. It delights in grassy situations, among stunted oak or such like, and is generally met with in flocks of from six to twenty. The moment they are disturbed they separate, and secrete themselves among the grass or in the foliage of trees, whence it is said they have been knocked down with sticks.

The white-crested kalij (*Gallophus albobristatus*) is the most common and widely distributed of the Himalayan pheasants. There is a congener, with white markings on the crest and back, found on the eastern ranges, Sikkim, etc. Mr. Blyth considered it a distinct species, and named it *G. melanotus*. But Adams has seen many old males of the *G. albobristatus* with very little white on the crown and back. This kalij pheasant (Mür-

ghee kookera of the natives) is plentiful along the great valleys, called Doons, bordering on the plains of India, up to elevations of from 6000 to 8000 feet. It prefers, however, the more southern ranges, and is seldom met with in the remote interior. The egg is white, and about the size of the bantam's. A nest may contain from nine to twelve and even more eggs, which are hatched about the end of May. Grubs, insects, seeds, shoots and leaves of trees, constitute the favourite food of the kalij.

The red-legged partridge, better known in the east by the name of chukor (*Caccabis chukor*, *Gray*), has a wide distribution. It does not differ in any well-marked particular from the Greek partridge of south-east Europe, and shows how easily species can be made. Of *Pedix Græca* there is a variety in the island of Crete. Lieut. Wood in his journey mentions taking part in a hunting expedition, when the party bagged 500 chukor, by running them down with beaters and dogs. The chukor prefers barren mountains to the rich and luxuriant vegetation of the more southern ranges; bare stony ridges clad with low scrub are its favourite haunts. During incubation the male remains near the nest, and may be heard all day piping his loud call, Cuc-cuc, resembling that of the domestic fowl. The Kashmirians call the bird Kau-kau, from its call.

The lineated kalij of Arakan and Burma is *Gallophus lineatus*; the purple kalij is *G. Horsfieldi*, the white-crested kalij is *G. albobristatus*, and the black-headed is *G. melanotus*. The Japanese pheasant (*Phasianus versicolor*) and *Sœmmerring's* pheasant (*P. Sœmmerringii*) are beautiful birds, close allies of the common pheasant (*P. colchicus*). They inhabit Japan, where they are the only representatives of the genus. Males of the Japanese pheasant were introduced into Europe some years ago, and hybridized freely with females of the ordinary bird, until the ultimate produce could scarcely be distinguished from the pure-bred *P. versicolor*.

The bar-tailed Reeve's pheasant (*P. Reevesii*) is remarkable for the excessive elongation of the two central tail-feathers, which in some specimens reach a length of five feet six inches. It is, besides, conspicuous for its beautifully variegated plumage. Its native country is Central China, to the north of the river Yang-tze-kiang. Amherst pheasant (*Thaumalea Amherstiae*) of N. China is a strict congener of the gold pheasant (*T. picta*) of Central China, but is even more showy and magnificent in plumage. It has been obtained by collectors in Yunnan and Western Sze-chuen in considerable numbers.

Temminck tragopan (*Cerionis Temminckii*) is found in China, Nepal, Bhutan, and Sikkim, being replaced on the slopes of the N.W. Himalayas by the black-headed tragopan (*C. melanocephala*, *Gray*). Temminck's tragopan is a representative of this splendid group of pheasants in Central and Western China; and Blyth's tragopan, the most recent addition to the genus, is from Upper Assam.—*Adams*.

PHEEAL. HIND. Supposed to be an old jackal, commonly known as the tiger's provider.

PHEESH. SIND. *Chamerops Ritchiana*, a dwarf palm growing near the Hubb river. Its leaves are gathered by the Chuta and Brahui tribes, and made into the matting and strings with

which their huts are constructed, also into shoes and sandals. A camel-load of leaves sells in the northern parts for 12 to 16 annas. It has a small acid berry.

PHIH or Pruh, the name given by the Lepcha to the Bhutani.

PHILADELPHACEÆ. *Lindl.* The syringa tribe of plants, comprising the genus *Philadelphus*, the Buzru, Mudnu, Zhoang of the Sutlej, appear to be the species *P. tomentosus*; grows at from 8000 to 9500 feet, and is stated to be used for ropes.—*Stewart.*

PHILIPÆA CALOTROPIDIS. *Stewart.*
Bhum-phor, . . . HIND. | Khurjin, Khalatri, PANJ.

This grows like a parasite on the roots of the Calotropis in Shahpur, and is said to be used as fodder for sheep, goats, and oxen, not camels. In Shahpur, Dr. Stewart says the plants grow on the roots of the *Salvadora oleoides*, and on all the tamarisks, and that he never found them on the Calotropis. The natives call it *Gidar ka tamaku*, jackal's tobacco. It is a very striking object. The bare, hard soil near a *Salvadora* bush cracks, and in the course of a night the place is studded with what resembles huge flowering heads of digitalis, each with a stem more than an inch thick, and without any regular leaves.—*Stewart.*

PHILIPPINE ARCHIPELAGO consists of over 500 islands, but only Luzon and Mindanao are of great size. The group lies between Borneo and Formosa, and separates the Northern Pacific Ocean from the China Sea. It covers 14½ degrees of latitude, from lat. 5° to 19° 30' N., but with the Bashee or Batanes Islands to lat. 21° N.; about 300 leagues from north to south, and 180 leagues from east to west, and in 1876 had 6,173,632 inhabitants. The islands were discovered by Magellan in 1521, and were first claimed by the Spaniards in 1565. They are separated from the Sulu Archipelago on the south by the Strait of Basilan, while on the north the Balintang channel separates them from the Batanes and Bashee Islands. The principal islands are Luzon, and to its south Mindoro, Magindanao, Palawan, Panay, and Samar. The Archipelago received its name after Philip the Second of Spain. It is the Spanish Indies, and is spread through an area of 52,647 English square miles. The Caraballos range of mountains runs through the centre of the whole, and in Luzon the mountains are occupied by unsubdued races. There are large lakes in most of the islands; and Mindanao, 'min of the lake,' gets its name from its numerous waters. There are thermal springs at Laguna, and boiling springs north in the district of Mainit. Luzon, the largest island, has an area of 2000 square miles; Mindanao, 1500 square miles; and the next in size are Palawan, Samar, Panay, Mindoro, Leyte, Negros, and Zebu. The light-house on the north pier of Luzon is in lat. 14° 36' N., and long. 120° 57' 20" E., and its population has been estimated at nearly five millions. It is the best known to Europeans. Long and narrow, 450 miles by from 10 to 140, its coast is fringed with rocks and broken by many gulfs, inlets, and capacious bays. The surface is covered through a large portion of its extent by mountains, two high ranges in the north being divided by the Cagayar river, which flows between two headlands into the sea. The focus of the aboriginal civilisation of the

Philippines, as might be expected, has been the main island of the group. Luzon is a corruption of the Malay and Javanese word *Lasung*, meaning a rice-mortar. The Spaniards are said to have asked the name of the island, and the natives, who certainly had none, thinking they meant a rice-mortar, which was before the speakers at the time, answered accordingly.

They are often shaken by earthquakes, and volcanic explosions are so frequent as to be regarded almost as common occurrences. The provinces are frequently visited with dreadful hurricanes, called in the country *Leaguio*. In no other part of the world are storms so terrific as there during the change of the monsoon. They are often desolated by locusts.

Negros or Buglas Island extends from lat. 9° 4' to 9° 50' N. The central group of the Philippines consists of Panay, Negros, Samar, Leyte, Masbate, Bohol, and Zebu; the two first and Luzon are the chief islands in which Negrito tribes exist to the present day, and even as regards Panay the fact must be considered doubtful. Negros, however, contains a considerable Negrito population; the crest of the mountain range, which extends throughout the length of the island, a distance of 120 miles, being almost exclusively occupied by scattered tribes. There is a rainy season of six months, and a mixed one of equal duration.

The population in 1873 was estimated at over six millions, viz. paying tribute, 5,501,356, and independent pagans, 602,853. The population has rapidly increased. In the early part of the 19th century, from the collective returns recently made out by the district magistrates, the total number of tributes were 386,654, which Walton multiplied by 6½, and produced the sum of 2,515,406, at which he estimated the total population, including old men, women, and children:—Indians of both sexes, 2,395,687; Sangley Mestizos, 119,719; Sangleys, 7000; whites of all classes, 4000. The following is now given as the population in 1791, 1810, and 1873:—

	1791.	1810.	1873.
Indians, 1,582,761	2,395,687	5,501,356	tributaries.
Mestizos, 66,917	119,719	602,853	independents.
	1,649,678	2,155,406	6,104,209

In 1740, Manila had only 6000 or 7000 inhabitants; in 1864 it was stated to have had 80,000; and in 1873 the population of Manila was 230,407, as under:—

European Spaniards, 4,189	Chinese Mestizos, 46,066
European Foreigners, 250	Spanish Mestizos, 3,849
Chinese, 15,157	Pure natives, . . . 160,896

The Aheta or Negrito of the Philippines are a Papuan race, the second name, meaning little Negro, being given to them by the Spaniards; but that of Ita or Aheta, so pronounced but written Ajeta, is their usual appellation among the planters and villagers of the plains. The woolly-haired tribes are more numerous in the Philippines than in any other group of the Indian Archipelago; they were estimated by M. Mallat, in 1842, to amount to 25,000. The islands Samar, Leyte, and Zebu have not any of them; but they were found in Negros, Mindanao, Mindoro, and Luzon. In the early accounts of them by Spaniards, they are described as being smaller, more slightly built and less dark in colour, than

the Negroes of Africa, and as having features less marked by the Negro characteristics, but as having woolly instead of lank hair; and their social condition could not then have been much better than now, since they were described as living on roots and the produce of the chase, and as sleeping in the branches of the trees, or among the ashes of the fires at which they had cooked their food. They are all well-formed and sprightly, but very low in stature, as they rarely exceed four feet and a half in height. They are ebony-black, like Negroes of Africa. Their hair is woolly like that of the Papuans. A line commencing to the east of the Philippine Islands, thence along the western coast of Gilolo through the island of Bouru, and curving round the west of Flores, then bending back by Sandalwood Island to take in Pratti, will separate the Malayan and all the Asiatic races from the Papuans and all that inhabit the Pacific, though along the line of junction intermigration and commixture have taken place.

The higher slopes, the Ysarog (Issaro) of the island of Luzon, are occupied by a small race, called erroneously Ygarrot. On the death of a near relative, the head-man of the house is said to kill any individual at random.

The Indian race are superstitious, credulous, fond of gaming, and particularly addicted to cock-fighting. This seems to have been introduced by the Spaniards, and in the year 1779 cock-fights were taxed for the first time. The Indians of the Philippines are among the best-favoured of the Asiatic islanders, but they are not reckoned so brave as the Malays. They are a quiet, inoffensive race, clean and well-shaped, and are all converted to the Romish faith. The sailors of the Philippines are so dexterous, that they are taken almost exclusively in the other islands as steersmen, and as such have a preference in many parts of the east.

Sulu was for many years the market where the Lanun and other pirates disposed of much of their plunder, and in former times itself was decidedly piratical. The Muhammadan religion has made much progress in Mindanao and the Sulu Islands, as has the Malay language, the usual channel through which it has at all times been propagated over the islands of the Indian Archipelago.

In the Philippines are many separate nations or tribes, speaking distinct languages, unintelligible to each other. Of these, the Bisayo, Bicol, Ilocano, Pangasinan, Pampango, and Tagala are the most important. The principal languages of Luzon are the Tagala, the Pampanga, the Pangasinan, and the Iloco, spoken at present by a population of 3,000,000; while the Bisaya has a wide currency among the southern islands of the group, Leyte, Zebu, Negros, and Panay, containing 2,000,000 people. The languages and their dialects in Luzon are the Aetai, Apayo, Bicol, Bisaya, Cebuano, Dadaya, Gadan, Ibilao, Idayan, Ibanag, Ifugao, Ilocano, Igorotte, Itanes, Ilongotte, Malaneg, *Pangasinan*, *Pampanga*, Sufin, *Tagala*, Tinguian, Zambal, spoken by about 4,700,000; those in italics being the most important, being spoken by about 3,000,000. The languages of Mindanao are Bisaya and Manday, spoken by about 100,000.

The languages of the distant islands are the Agutaino, Carolino, Chamorro, Calamiano, Coyuvo, and Ibanag, spoken by about 30,000.

The Bicol is spoken only in the two Camarines, Albay, Luzon, the islands of Masbate, Burias, Ticao, Catanduanes, and the smaller islands adjoining. Spanish has scarcely acquired a footing.

Mr. Crawford remarks that whether the principal languages of the Philippines be separate and distinct tongues, or mere dialects of a common language, is a question not easy to determine. Certainly, he says, the phonetic character of the Tagala, the Bisaya, the Pampangan, and Iloco are, sound for sound or letter for letter, the same. It does not appear, from a comparison of the phonetic character and grammatical structure of the Tagala with those of Malay and Javanese, that there is any ground for fancying them to be one and the same language, or languages sprung from a common parent, and only diversified by the effects of time and distance; and an examination of the Bisaya dictionary gives similar results. The great islands of Mindanao, Palawgan, and the Sulu group of islets, forming the southern limits of the Philippine Archipelago, contain many nations and tribes, speaking many languages of which little has been published. Mr. Crawford, on the information given by Mr. Dalrymple, informs us that even in the little group of the Sulu Islands a great many different languages are spoken; and he gives a short specimen of 88 words of one of those most current.

The alphabet of the Tagala nation of the great island of Luzon or Luzonia consists of thirteen characters. It is the only one existing in the whole of this group, and seems at one time to have been used among the civilised tribes of the neighbouring islands, having spread even to Magindanan and Sulu. The forms of the letters are rather bold, and more complex than that of the Sumatran alphabets.

Spain has in all her conquests kept prominently before her the propagation of Christianity in the form embodied in her church. The Philippines therefore present a spectacle which contrasts strongly with the Dutch dependencies in the east. Spain appears in the Archipelago in her religious earnestness, her ecclesiastical assumption, and her gorgeous establishments. The natives of the Philippines have generally been converted and received into the Catholic Church. It is observed by Malte Brun, in his sketch of the inhabitants of the Philippines, that they are the only people in the Eastern Archipelago who have improved in civilisation from an intercourse with Europe. A commercial monopoly formed no part of the Spanish policy in that quarter of the world. No rich spices, no precious gums, no abundance of rare metals or drugs, were there to allure Spanish cupidity. The Spaniards nevertheless appear to have been guided in their plans of colonization—at least in the Indies—by a theory which nations still more great, and infinitely more free, might have adopted with advantage to themselves and to all humanity. They were not sordid monopolists; they ruled less by terror, and more by moral influence and the persuasions of their priests; and their power, not founded on the edge of the sword, was tolerable to the native race. They encouraged settlements, they allowed freedom to traffic; and though they levied unjust and irksome taxes, their system has been productive, within its narrow sphere, of more good than that of other conquerors in the Eastern Archipelago. That their

commerce in the further east never developed itself to any lustre or grandeur, is true, but it was because their monopoly was less rigid, not because their vigour was less manly, than that of the Dutch. Had Spain been more energetic, and still more liberal, her prosperity in the Eastern Archipelago might have rivalled that which she once enjoyed in the western world. The Tagala, who dwelt in the district round about Manila, and are derived, according to their traditions, from the Malays, have submitted thoroughly to their rule, and become the servants of strangers. The Zebuans appeared firm in the defence of their independence, but were driven from their position by a body of men landed in good order from the ships.

The Philippine Islands have 21 species of mammals and 288 species of birds. The large and curious *Idea leuconoe*, with its semi-transparent white wings veined and spotted with black, is copied by the rare *Papilio idaeoides* from the same islands. The *sileucio* is a logwood of an excellent quality. They have also the braziletto, another dye-wood; the eagle-wood, narra, a species of red ebony striped; the tindal-wood, all red; the sandal-wood; the pangasinang fir, the molave, an incorruptible wood, the guijo, excellent for shipbuilding, as well as the banava, calantes, or Philippine cedar, the sagovan, red and white, mary-wood, for small masts, spars, etc., the manga-chapuy betis, dasag, dungol, calumpan, and many others.

Rice is largely used as food, and, as in other countries where it is grown, there are many varieties. Manila hemp, from the *Musa textilis*, has acquired a high character in Europe; 25,000 tons were shipped in 1858 from Manila alone, of which Great Britain received one-fourth. In 1877 to 1879 the quantities of it and values received by Britain from the Philippines were as under:—

	Cwt.	Value.		Cwt.	Value.
1877,	332,304	£488,069	1879,	337,687	£434,037
1878,	421,160	551,856			

In 1879, the value of the sugar, hemp, and tobacco exported was twelve millions of dollars.

Coal occurs in the island of Zebu.

Gold is found in the mountains and in alluvial deposits, abounds in Luzon and in many of the other islands; but in the mountains the mines are not worked, indeed it may be said they are scarcely known. The wild races collect it in the brooks and streamlets. The natives of the province of Camarines in Luzon partly devote themselves to the working of the mines of Mambulao and Poracale, which have the reputation of being very rich.—*Mr. Rich, Botanist to the United States Exploring Expedition; Lubbock's Orig. of Civ.; Marryat's Indian Archipelago; Wallace, ii. p. 218; Quarterly Review, No. 222; Walton's State; Earl, Papuans; St. John's Indian Archipelago; Crawford's Malay Gram. and Dict.; China, Japan, and Philippines Chronicle and Directory.*

PHILISTINE, or foreigners, gave that name to Palestine, where they opposed the Jews in the conquest of that country.—*Sharpe's Egypt.*

PHILLYREA. Of this genus, Roxburgh describes *P. paniculata* and *robusta*, and Wight in *Icones* gives *P. robusta*, *terminalis*, and *affinis*. *P. paniculata* is a small tree with oblong ovate leaves; flowers in terminal panicles, pure white, bending down the branches, and giving the tree

a graceful appearance. Introduced from China. *P. robusta*, the Bhoemoora of India, is a large tree.—*Riddell.*

PHILOMELA LUSCINIA. *Selby, Gould, Sw.*

<i>Motacilla lusciniæ, Linn.</i>	<i>Curruca lusciniæ, Flem.</i>
<i>Sylvia lusciniæ, Latham.</i>	
Nightingale,	ENO. Usignolo,
Rossignol,	FR. Ruiseñor,
Nachtigall,	GER. Nachtigall,
Rossignuolo,	IR. Eos,
	WELSH.

The nightingale is rich brown above, rump and tail with a reddish tinge, throat and middle part of belly dirty or greyish white; lateral parts of the neck, breast, and flanks, grey; bill and legs light brown; sexes alike. The nightingale shuns observation, abiding in the thickest covert, and in these the nest is sometimes placed on a low fork, but generally on the ground. Withered leaves, particularly those of the oak, very loosely confined with dried bents and rushes, and lined internally with fine root-fibres, form the structure. The eggs, of an olive-brown, are four or five in number. After the young are hatched, generally in June, the melodious song of the male ceases, and is succeeded by a low croak, varied occasionally with a snapping noise; the first is considered to be meant for a warning, and the last as a defiance. The food consists of insects, such as flies and spiders, moths and earwigs.

Philomela orpheæ, Jerdon (the *Sylvia* of Temminck, and *Curruca Jerdonii, Blyth*), except in Bengal, occurs all over India in the cold weather.

Philomela Turdoides, Blyth.

Luscinia major, Brisson. | *Sylvia philomela, Bechst.*

Thrush-nightingale, inhabits Europe and Egypt. Its song is loud, but far inferior to that of the true nightingale.

PHIN, stone circles, which the Todas call P'hin. Also a common term for a pot, urn, or any vessel of such-like description.—*Harkness' Neilgherry Hills, p. 33.*

PHIRAOOTI. HIND. A small wheel like a chalar on the edge of a pond or nullah, for raising water; it is worked by the foot.

PHIRI of Kashmir, seconds of shawl-wool.

PHIRKI. PUSHTU. A section of a tribe.

PHLAP, also Khlap, the Assamese name of the tea plant. The camellia is called Misa Phlap in Muttuck, and Heelkat in other parts of Assam. In Cachar it is called Dullicham or white wood, from the light colour of its bark. Its timber is hard and durable, and used for posts of houses.

PHLOMIS RUSSELLIANA, Jerusalem sage, perennial and shrubby plants, with coarse hairy leaves resembling the common sage; the flowers are purple, red, yellow, etc., growing readily from seed in any common soil.—*Riddell.*

PHLOX, a genus of elegant plants, which, from their lively colours, have a pretty appearance when grown in patches. The colours are red, purple, lilac, white, etc.; grow readily from seed in a light garden soil, either in pots or the flower-beds; should be sown thinly, and when one or two inches high, transplanted where intended to flower; require in pots a somewhat loamy soil, well manured and drained.—*Riddell; Jaffrey.*

PHOBEROS HOOKERIANUS. *Wight.* A large tree of the central province of Ceylon, at an elevation of 4000 to 7000 feet.—*Thw.*

PHOBEROS ROXBURGHII. *Bennett.*

Ludia spinosa, Koch. | *Flacourtia stigmatoia, Wall.*

PHOCA.

A tree of Sumatra; flowers small, reddish-white, March and April; fruit, September.—*Roxb.*

PHOCA, the seal. Apollonius related that he had seen at Ægeæ, near Issus, a female Phoca which was kept for fishing purposes.—*Yule, Cathay*, i. p. 112.

PHOCÆNA BREVIROSTRIS. *Owen*. One of the cetaceæ; occurs in the Bay of Bengal.

PHOCÆNA COMMUNIS.

Ph. Rondeletii, *Willughby*. | *Delphinus phocæna*, *Linn.*

The common porpoise.

PHOCBE LANCEOLATA. *Nees*. A timber tree of Bhajji in the Panjab, and common in the Wynad, Animallays, and, Tinnevely mountains at 3000 feet elevation.—*Beddome, Fl. Sylv.*

PHOCBE WIGHTII. *D. C.*

P. lanceolata, *W. J.* | *Kumara* of Burghers.

This good-sized tree is very common about Outacmund and the higher ranges of the Neilgherries, and in many other localities along the Western Ghats, at considerable elevations. It is in flower and fruit all the year round; it yields a good dense wood of a light-red colour, which is in use for various purposes with the natives. Mr. Gamble enumerates also Ph. angustifolia, attenuata, glaucescens, pallida, paniculata, and villosa.—*Beddome, Fl. Sylv.* p. 292.

PHENICIA. One site of this ancient dominion was on a narrow fertile strip of land, lying between the western slope of Lebanon and the Mediterranean Sea, and extended from the river Eleutherus on the north to near Mount Carmel in the south. The ancient city of the name stood in lat. 33° 34' N., on a promontory. India seems to have obtained an alphabet from the Phœnicians, about the 5th century B.C., about the time that the Greek letters became known on the higher feeders of the Indus.

The Phœnicians are supposed to have emigrated from the Persian Gulf to the shores of Syria, between B.C. 3000 and 2500, and their alphabet was adopted by nearly every civilised nation of the ancient world. They were the great traders of the world. At first the trade between the east and west, by the Red Sea and Persian Gulf, was in their hands; it survived in full vigour the destruction of Tyre, B.C. 586 and 332, and of Carthage, B.C. 146; but the sea-fight off Actium seems to have put a term to the Phœnician commerce in the Mediterranean, which went into other hands, to the Arabs who had shared it with them from the earliest times, and passed to the Portuguese.

PHENICOBALANUS of the ancients was probably the nut of the Doum palm of Egypt.

PHENICOPTERINÆ, a sub-family of birds of the family Anatidæ.

PHENICOPTERUS ROSEUS. *Pallas*.

P. antiquus, *Temm.* | P. minor, *Jerd.*

Kan-thunti, . . . BENG. | Pu nari, . . . TAM.
Bag-hans, Raj-hans, HIND. | Pu-konga, . . . TEL.

The flamingoes number about six species, of which three are American. This bird is found on the shores of the Mediterranean, is extremely abundant in Tunis and Egypt, and extends its range as far as India. The flamingoes cross the Red Sea from Egypt to Arabia, prior to the breeding season, in immense flights, sometimes exceeding a mile in length. They feed on minute mollusca, which they gather in shallow water. The upper mandible is always lowest during the operation, and the objects of search are passed over it as a

PHŒNIX DACTYLIFERA.

duck sifts with its lamellæ. The action of the neck by which the head is thus turned downwards and inwards gives a most peculiar character to a flock of flamingoes as they wade along the shore, and in their flight the black pinions and roseate coverts make a beautiful contrast with their snow-white bodies. See Birds.

PHŒNIX, a genus of palms, the species of which are found in the south of Europe, in the north of Africa, and in all the south of Asia, eastwards to the Archipelago, and their products are brought into the markets of India. The trunk, marked with the scars of fallen leaves, is in some species so short that it hardly appears above ground.—*Seeman*.

PHŒNIX ACAULIS. *Ham.*

Schaap, . . . LEPC. | Pind Khajur? . . . PANJ.

A small stemless palm which grows in Sikkim on the driest soil and in the deep valleys. The Lepchas eat the young seeds, and use the feathery fronds as screens when hunting. It is found growing east of Siligori in the Terai, and is a sure sign of a hungry soil.—*Stewart's Panjab Plants*, p. 243; *Hooker's Him. Jour.* i. pp. 143, 400.

PHŒNIX DACTYLIFERA. *Linn.* Date palm.

Tamr, Nukhal, .	ARAB.	Kurjan, Khurma, .	PERS.
Swon-pa-lwon, .	BURM.	Payr-etchum maram, TAM.	
Paynd khajur, .	DUKH.	Kharjurapu chettu, TEL.	
Khajur, Chuhars, .	HIND.	Perita chettu, . . .	"
Khaj,	PANJ.		

The Fruit.

Rutub,	ARAB.	Pind, Chirwi, Bagri, HIND.
Tamr (fresh),	"	Bela (dried),

The Cabbage.

The Gum.

Gadda, Galli, . . .	HIND.	Hokm-chil, ?
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The Stone.

Usteh-khurma, . .	ARAB.	Gutla-i-khajur, . .	PERS.
Tukhm-i-khurma, .	PERS.		

The date tree grows in tropical and Middle Asia, in North Africa, Arabia, and Persia, and in some parts of Northern India. Its northern limit is lat. 35° N. The town of Elche in Spain is surrounded by a planted forest of 80,000 date palms, and the sale of leaves there and at Alicante for decoration yields a large revenue; and in the Gulf of Genoa also is a date forest. It is unisexual, grows to a height of 80 to 120 feet, and produces to the age of 100 to 200 years. It is the great support of the Arabs of Yemen; nineteen-twentieths of the Fezzan population live on dates for nine months of the year, and for many animals it is their sole food, the oases being bare of herbage. The tree will live in saltish soil, and the water for its irrigation may be slightly brackish. One male tree is considered sufficient for fifty female plants, and the pollen dust is sparingly applied by artificial means. Several bunches of flowers are formed in a season, each producing often as many as a hundred dates. In Egypt as many as four cwt. of dates have been harvested in one season from a single date palm. There are many varieties of dates; those of Gomera contain no seeds. The best dates are produced in oases, where the water is abundant. The Zadié variety produces the heaviest crop, averaging 300 lbs. to the tree; the better varieties are only obtainable from offshoots of the root. These will commence to bear in five years, and will be in full bearing in ten years. It was introduced into the Southern Panjab in the 7th or 9th century; but the true date is nowhere

PHŒNIX FARINIFERA.

known in any quantity to the north or east of Tulamba and Jhang, both close to the Chenab, although the tree has been tried in the districts of Lahore and Amritsar, and there are a few in the northern part of Jalandhar, where, however, the chief use of the tree is for the sweet juice. It was introduced into Oudh. There are some at Saharunpur, which give good fruit, especially when the rains are late. The natives assert that it will not grow except where the soil is or has been subject to inundation. There are also hundreds of the trees about various towns in Multan and Muzaffargarh, but it is most abundant near Dehra Ghazi Khan, Trans-Indus, where the country for ten or twelve miles from north to south has such numbers of trees, that eight or ten thousand rupees are said to be annually got by Government from the small tax which is levied on each female tree, as the sexes are on separate individuals. At Multan there is a bedana (*i.e.* seedless) fruit, in which the stone and its kernel are represented only by a little shrivelled membrane, the rest of the fruit consisting of the pleasant sweet pulp. Edgeworth states that there is only one tree yielding these, which was formerly reckoned badshahi, royal, *i.e.* the produce was reserved for the ruler of the country. But several trees produced these, which are the upper fruit ripening after the lower ordinary dates of the same tree. The fruit of a female tree is much more valuable than its sugar, and the male tree has but little juice. The terminal bunch of young leaves, taken only when a tree is cut down, is eaten by the natives both raw and cooked. There are at least sixty varieties of dates. The date stones are made into beads; the leaves are made into couches, baskets, mats, bags, brushes, fly-traps.—*Stewart's Panjab Plants*, p. 245; *Seeman on Palms*; *Mason's Tenasserim*; *Roxb. Fl. Ind.*; *Royle's Fib. Plants*; *Ainslie*, p. 30; *Voigt*; *Von Mueller*; *Powell*, i. p. 379.

PHŒNIX FARINIFERA. Roxb.

Phoenix pusilla, Gertn.

Intha, . . . MALEAL. | Chiruta ita, . . . TEL.
It'hi, . . . TAM. | Chittita chettu, . . . "

This dwarf palm grows in the sandy plains of the south of India, where it flowers in January or February; the fruit ripens in May, and the sweet pulp of its seeds, also the farinaceous substance of its stem, are eaten in times of scarcity. The leaflets are made into mats; and the common petioles are split into three or four, and are used to make baskets of various kinds. The trunk, about one or two feet high, is so enveloped in the leaves as to appear like a bush. It is common in the Peninsula of India, on dry, barren, sandy ground not far from the sea. The exterior or woody part of the trunk consists of white fibres matted together; these envelope a large quantity of farinaceous substance, which the natives use for food in times of scarcity. To procure this meal, the small trunk is split into six or eight pieces, dried, and beaten in wooden mortars, till the farinaceous part is detached from the fibres; and the meal, when separated by sifting, is fit for use by being boiled into a thick gruel or conjee. It is, in fact, an inferior sago. It seems to possess less nourishment than common sago, which is obtained in a similar manner from another palm, and is less palatable when boiled, but it has saved

PHŒNIX SYLVESTRIS.

many lives in times of scarcity.—*Seeman on Palms*; *Jaffrey*; *Eng. Cyc.*

PHŒNIX HUMILIS. Royle. Dwarf date palm.—*Stewart's Panjab Plants*, p. 245.

PHŒNIX PALUDOSA. Roxb.

Hintal, . . . BENG. | Giruka tati chettu, . TEL.
Then boung, . . . BURM. | Hintalamu, . . . "

The small marsh date palm tree, grows plentifully on the Sunderbuns south of Calcutta; on the low islands in the rivers, and on the shores which are inundated with the highest tides, the marsh date palm abounds. It is about 20 feet high, no thicker than a walking-cane; fruit precisely like a bunch of dates, but is not edible. Griffith says it is well worth cultivating on account of its elegant impenetrable tufts, which well adapt it for bank scenery. The trunks of the smaller trees serve for walking-sticks, the long trunks for rafters, and the leaves for thatch.—*Hooker's Him. Journ.* i. p. 1; *Mason*; *Seeman*; *Von Mueller*.

PHŒNIX RECLINATA, of the Cape of Good Hope, has a thin, sweet coating of the fruit.

PHŒNIX SYLVESTRIS. R. Wild date palm.

Elate sylvestris, Linn.

Send ka jhar, . . . HIND. | Eetcha maram, . . . TAM.
Khaji of . . . SALT RANGE. | Ita chettu, Ita, . . . TEL.
It'sham pane, . . . TAM. | Pedda ita, . . . "

The wild date palm grows throughout British India, and is of great value on account of the palm wine it yields, and the sugar made from the palm wine. It occurs wild in many places in and near the Siwalik tract, up to and probably beyond the Indus, in the Salt Range, and out into the plains in the east of the Panjab. It is not seen much above 3000 feet in the outer hills; and Vigne correctly points out that the palms of Baramoule in Kashmir were creations of Moor's imagination. It is found in the Sind Sagar Doab, on the borders of sandy tracts, and in such land that little else grows on.

In Muzaffargarh it does not grow actually in the sandy desert, but flourishes on its borders in the most wretched soil, and where hardly any other vegetable exists, and it is often found in luxuriant groves. They pay a tax to Government, which forms an important item in the sair revenue of some districts. If not too early notched for the wine, it grows straight and very tall, length of trunk being 50 feet, and girth 2 feet, and attains full size in 40 years. Its wood is used for water-conduits, and for temporary bridges; and its leaves are extensively employed for baskets and matting for floors. Its timber is inferior to the palmyra, cocconut, etc. The fruit when ripe is small, oval-shaped, dark-coloured, and sweetish, about the size of a ripe wild plum, but of no value. The leaves and stalks are made into baskets, boxes, and hats, twisted into rope, used for thatching, and in the manufacture of light mats for building huts. At the age of seven or ten years, when the trunk of the tree is about four feet high, it begins to yield juice, and continues productive for 20 or 25 years. The juice is extracted during the months of November, December, January, and February, during which period each tree is reckoned to yield from 120 to 240 pints of juice, averaging 180 pints. Every 12 pints or pounds is boiled down to one of gur or jagari, and four of gur yield one of good sugar in powder, so that the average produce of

each tree is about 7 or 8 lbs. of sugar annually. It yields Sendi or palm wine, commonly called toddy. The mode of obtaining this is by removing the lower leaves and their sheaths, and cutting a notch into the centre of the tree near the top, from which the liquor issues, and is conducted by a small channel, made by a bit of the palmyra tree leaf, into a pot suspended to receive it. This juice is either drunk fresh from the tree, or boiled down into sugar, or fermented for distillation, when it gives out a large portion of spirit, called arrack. Date sugar is imported in considerable quantities into Britain. Dr. Roxburgh calculated that in 1800 only about 100,000 lbs. were made annually in all Bengal. The inner wood furnishes, by boiling, a kind of catechu, which contains much tannin. It is obtained by boiling the heart-wood for a few hours, when it assumes the appearance and consistency of tar. It hardens by cooling; and when formed into small squares and dried in the sun, is fit for the market. The produce of Bombay is of uniform texture and of a dark-red colour. That of Konkan and other parts of India is of a chocolate colour, and marked inside with red streaks. The analysis of Sir H. Davy gave the following result:

	Bombay.	Konkan.		Bombay.	Konkan.
Tannin, . .	54.5	48.5	Insoluble mat-		
Extractive, .	34.0	36.5	ters, sand,		
Mucilage, . .	6.5	8.0	lime, etc., .	5.0	7.0

The fibres of the leaf-stalk are used for cables in the Red Sea. The natives of the east chew the fruit in the same manner as the areca nut, with the leaf of the betel, pepper, and quicklime.—*Eng. Cyc.*; *Roxb.*; *Simmonds*, p. 579; *Ainslie*, *Madras Ex. Jur. Report*. See Date.

PHOG. **HIND.** *Polygonum convolvulaceum*, *Calligonum polygonoides*, *Ficus caricoides*, and *F. reticulata*. Twigs are woven into a wicker-work to line wells and prevent the earth falling in.

PHOG or Phogli. **HIND.** A wild grain; dregs or lees of anything after infusion, etc. The Phogli of Muzaffargarh is the fruit of a plant called phoke, found in desert tracts in the Panjab. It somewhat resembles the caper in its habit and colour, being destitute of true leaves, and composed of numerous fine and angular branchlets. It is much more slender than the caper, and does not attain to the same size. The flowers and fruit, which are very small and of a grey colour, fall off on attaining to maturity, and are gathered by the natives, who mix them with ghi, and use them as a relish. The fruit is well known throughout the districts.

PHOGLI. **HIND.** A term applied to a coil of fine gold wire in spangle-making.

PHOLAHEE. **HIND.** A small thorny tree. Wood of the young tree white, of the old dark-coloured, especially the heart-wood, tough and durable; used for cart wheels and sugar mills. The branches of the trees are used for fences. Length of tree to first branch, 5 feet, and girth 3 or 4 feet.—*Dr. Campbell*.

PHOLIDOTA, a genus of the orchid family. *Ph. articulata*, *Lindl.*, grows in the Khassya mountains and in Moulmein; *Ph. imbricata*, *Lindl.*, throughout India; and *Ph. undulata*, *Wall.*, in the Khassya Hills.

PHOOT or Phooti. **HIND.** *Cucumis momordica*; field cucumber, sown generally in the fields amongst jowari. It is something between the

melon and cucumber; keeps for a long time if not too ripe, and would be valuable as a store vegetable for sea.—*Riddell*.

PHOOTANAY or Poothani. **HIND.** Parched Bengal horse gram.

PHORMIUM TENAX, *Forster*, is the Koradi or Harakeke, or New Zealand flax plant. There are several varieties, which yield flax of varying degrees of fineness. It is a plant likely to thrive on most of the lower hill ranges of British India, and to prove especially suitable for culture on parts of coffee estates in which the coffee has died out. Its fibre or flax, when well prepared, is superior in strength and equal in other respects to European flax, so that it seems very desirable that its culture should be encouraged. The comparative tenacity, according to Dr. Lindley, is—Silk, 34; New Zealand flax, 23; European flax, 16; European hemp, 11.

The Phormium is a flag-like plant, with sword-shaped leaves, and bears its flowers on a stalk like the American aloe. The flower contains a sweet juice. It is much liked by children, and is collected by the natives in their calabashes to the extent of half a pint from a plant. At the root of the leaves a gum-like substance is found, which serves the Maori as a substitute for sealing-wax and glue, and is also eaten. The pith of the dried flower-stalk when ignited burns like tinder, and is used as a slow match to carry fire on a journey. The leaf when green is used for writing on, the characters being engraved with a sharp-edged shell. Split and cut into strips, it serves instead of cords, strings, ropes, straps, etc., and is indispensable to the natives as a means of binding in building huts and canoes. The green strips of the leaves are plaited by the women into neat baskets, which at meals serve as plates and dishes; while the men make lines, nets, and sails of them. They also extract the fibre, dye it of various colours, and thus get material for mats and garments. The plant covers millions of acres in New Zealand, growing spontaneously on any kind of soil, moist or dry, and in any locality, high or low. It, however, attains its greatest luxuriance in moist alluvial soil. The leaf in structure resembles that of the agave. The separation of the fibre may be effected by means of maceration, or mechanical force applied so as not to injure the bast-cells, sometimes combining both these means. The natives, who use only the upper part of the leaf and only on one side of it, clean the fibre by scraping off the parenchyma with a shell. The quantity prepared by them was very small, and the Government of New Zealand, being impressed with the great value of the flax as an article of export, offered some years ago a reward of £4000 for a machine that would clean the fibre rapidly and effectively. In a small factory near Nelson the process employed was to boil the leaves in lye-water, then to dry and twist them into a thick rope, after which they were passed between ribbed wooden rollers, until the fibre was laid bare in a tolerable state of purity. The dried and bleached produce thus prepared was sold for £25 per ton. In 1860, the Rev. Mr. Purchas invented a machine for cleaning the flax, consisting essentially of a large solid cylinder or drum of hard wood, revolving, and so put together that its surface presents the cross section of the wood. Above it are a number of perpendicular

iron plates, grooved on their lower edges, which, being raised, descend in succession by their own weight. The green leaves are passed between the drum and the iron pounders, when the action of the latter, aided by a stream of water, separates and cleans the fibre. A steam-engine of 8 horse power works the machine, which will clean a ton of fresh leaves, yielding 3 cwt. of flax, per day. It has been tried on other fibrous plants, and found equally suited for the agave, Manilla hemp, and pine-apple. In October 1872, the sale of its fibre in London was 11,500 bales, value £19 to £31. Its tow for paper sells from £10 to £20 the ton.—*Dr. Hochstetter, quoted by Dr. G. Bidie, M.B.; Dr. Bennett, i. p. 76; Von Mueller; Sir Joseph Banks in Cook's First Voyage.*

PHOSPHORESCENCE. The phenomenon of phosphorescence, Dr. Hooker says, is very conspicuous on stacks of firewood, at Darjiling, during the damp, warm, summer months, May to October, at elevations of 5000 to 8000 feet; it may be witnessed every night by penetrating a few yards into the forest,—at least it was so in 1848 and 1849; and during Dr. Hooker's stay there, billets of decayed wood were repeatedly sent to him by residents, with inquiries as to the cause of their luminosity. A stack of firewood presented a beautiful spectacle for two months (in July and August), and on passing it at night, Mr. Hodgson had to quiet his pony, who was always alarmed by it. The phenomenon invariably accompanies decay, and is common on oak, laurel, Tetraneura, birch, and probably other timbers; it equally appears on cut wood and on stumps, but is most frequent on branches lying close to the ground in the wet forests. It is a vital phenomenon, and due to the mycelium of a fungus. Alcohol, heat, and dryness soon dissipate it. In the animal kingdom, luminosity is especially common amongst the radiata and mollusca; it is also frequent in the entomostrophic crustacea, and in various genera of most orders of insects. In all these, even in the sericularia, Dr. Hooker observed the light to be increased by irritability, in which respect the luminosity of animal life differs from that of vegetable. Phosphorescent matter is secreted or emitted at will by an infinite number of crustacean and molluscan animals, with which the ocean abounds, but has been observed to obtain also in a species of shark, and in the glow-worm, fire-fly, and the luminous centipede, *Geophilus fulgens*, one of the myriapoda. It also exists in some fungoid plants; a species of agaricus in the Australian woods is vividly luminous, and is described by Dr. Hooker as occurring at Darjiling. Dr. F. D. Bennett was inclined to believe that phosphorescence of the sea is caused from a luminous power in living marine animals. Sometimes the sea for miles gives at night a pale light from myriads of noctiluca. The commonest phosphorescence is caused by various small animals, small crustaceans. Some crustacea certainly derive their phosphorescence from containing in their stomachs phosphorescent food, and their excrement is phosphorescent. When large fish or porpoises or penguins dash through water full of luminous crustaceans or noctiluca, their bodies are brilliantly lit up, and their track marked with a trail of light. The Ascidian colony pyrosoma, however, gives the most beautiful phos-

phorescence. When touched, the light breaks out at first at the spot stimulated, and then spreads over the surface of the colony as the stimulus is transmitted to the surrounding animals.

The pyrosoma is a pelagic aggregation of individuals, forming a hollow cylinder closed at one end, from 5 inches to 5 feet in length. The *Pyrosoma Atlanticum*, from 3 to 4 inches long, is composed of an aggregation of small tunicaries, and produces a powerful light on being disturbed. Large forms of *Aurelia* and *Cyanea* move along, surrounded by a halo of golden greenish light. The little *Dysmorpha* gives a light of a deep aurelian hue. A large jelly-fish (*Medusa*) was observed near Nantucket, from the mast of a vessel, moving lazily along, its disk encircled by a halo of 20 feet in diameter, while the train of gleaming tentacles stretched away 200 feet or more. Mrs. Agassiz measured one whose disk was 7 feet across, with tentacles over 112 feet in length. The shapely *Zygodactylus* wander about like ignes fatui; the *Idylla* gleams with ever-changing hues; pleurobranchiae flit about, their fringed tentacles glistening with red, green, yellow, and purple rays. *Urticina nodosa* is a luminous sea anemone of New England. Noctiluca zones occur 30 miles in breadth, about 30,000 in a cubic foot; the diatom pyrocistis, the star-fishes, *Asterias ophiocnida*, species of Ophiuridae, and others, are luminous, and amongst others may be named the moon-fish, *Orthogoriscus mola*; the lamp-fish, *Scopelus resplendens*; species of *Chauliodus argyroleucus*, and the *Squalus fulgens* of Florida. The sea-pen, *Renilla reniformis*, emits a golden-green light. The *Pennatula phosphorea* sea-pen emits a vivid purple light; also species of the little pterypod *Cleodora*. *Pyrocistis fusiformis* is the lantern fish. *Cirratulus grandis* is a marine worm of Great Britain. *Cancer fulgens* of the Atlantic sends out flashes of light, especially when irritated.

All the alcyonarians dredged by the *Challenger* in deep water were found to be brilliantly phosphorescent when brought to the surface.

The polyps of the *Veretillum cymoniorum*, a zoophyte of the Mediterranean and Atlantic, is phosphorescent. At night, on the slightest irritation, a whole colony glows with undulating waves of pale green phosphoric light.

Medusæ possess luminous powers. The *Salpæ* are luminous. The *Squalus fulgens*, or luminous shark, gives out a shining light like that of the pyrosoma. Dr. Bennett found the surface of the water become brilliantly phosphorescent, when his boat struck on a coral reef at Thur Bay in the island of Rotuma. One of the pyrosoma, a luminous aggregate tunicated mollusc, has been found there floating in great numbers; and little minute points, apparently of a jelly-like substance, are found on the Australian coast, similar to those which on the coasts of England have been called noctiluca.

Kirby and Spence state that a ground beetle (*Carabus*) has been observed running round and round a luminous centipede as if afraid to attack it.

A nocturnal ape, the *Nyctipithecus trivirgatus*, is said to emit light from the eyes.—*Moseley, p. 574; Bennett, p. 64; Hooker's Him. J. ii. p. 150; P. 71; Jameson's Journ. xi. p. 222, 1824.*

PHOSPHORUS PILLS, for destroying rats, consist of hog's lard ground up with cocoanut and phosphorus made into paste. This forms

the most certain bait and poison combined to destroy rats; care must be taken in mixing the phosphorus, of which very little suffices.

PHOTINIA, a genus of the *Pomeæ* or apple tribe of plants: the *Yelnyo* of the Darjiling Hills.

The bark of *P. Bengalensis*, *Wall.* (the *Mespilus Bengalensis* of Roxburgh), of Assam, Chittagong, Khasya, and Nepal, is used in Nepal for dyeing scarlet. *Ph. eugenifolia*, *Lindley*, grows on the Khasya mountains. *Ph. glabra* is common in China, and ornamental. It is a noble evergreen, which in the winter becomes covered with bunches of red berries.

Ph. notoniana, *Wall.*, is a very handsome middling-sized tree, very common at the higher elevations on the Neilgherries, Annamallays, Pulnies, and on the Ceylon mountains. It flowers in March and April, and its fruit ripens in June and July; the latter in taste and flavour resembles that of the mountain ash. The tree is called *Kaddi bikkri* by the Badaga, on the Neilgherries; the timber is adapted for cabinet purposes; it is closely allied to, if distinct from, *P. integrifolia*.

Ph. serratifolia, *McClell.* *Doukyat*, *Burm.* Found in the neighbourhood of Rangoon and along the banks of the streams in the Rangoon districts, in the direction of the teak forests. Wood red, adapted to cabinet-making. The leaves of this plant are used for a green dye. Mr. Gamble mentions *Photinia Griffithii*, *Decne.* of Himalaya, *Ph. Lindleyana*, *W. and A.*, of Neilgherries, *Ph. mollis*, *Hooker*, of Himalaya.—*A Res. among the Chin.* p. 51; *Lindley*; *Beddome*, *Fl. Sylv.* p. 192; *Dr. McClelland*; *Voigt*.

PHOUNGYE, a Buddhist monk of Burma; the term means great glory. The body of a deceased Phoungye is placed on a car, taken to the cemetery, and lifted on a pyre, which is composed of highly inflammable materials, and which is ignited by discharges of rockets, while dancing and drinking go on in booths hastily constructed for the occasion.

PHRA. *Burm.* Lord. When a Burman enters a kyounge or monastery, he kneels before the image of Gaudama, bends his head three times in honour of the three precious things,—phra, tara, thenga, i.e. the Lord, the law, and the assembly. *Phra-kywn*, in Burma, are the Buddhist pagoda slaves. In the Buddhist religion, as it prevails in Burma, the servitors at the temples are invariably out-castes, with whom the rest of the community will hold no intercourse. They sweep the vicinity, clear away the remains of offerings, and wash the idol.—*Forbes*.

PHRAGMITES COMMUNIS, the reed. *Lu*, *Tib.*; *Wei*, *Chin.* This tall, tufted reed grows on the banks and islands of the Yang-tze river, to the height of 12 to 18 feet, and yields a revenue to Government. The young shoots are eaten; and the fistulai or reed stems are used as fuel, to construct houses, mats, and hurdles. The leaves wrap up rice balls. It is a tall plant, with annual stems and a perennial root, and is found exclusively in places overflowed even during summer. In such situations, in Great Britain, all through Europe, Siberia, Japan, North America, and even Australia, it forms thick coverts, and yields an abundance of stout durable grass of great value for the purpose of thatching the roofs of buildings. This is undoubtedly the *φραγμίτης* of the Greeks. A second species is said to grow in

Egypt, and a third in the island of Mauritius.—*Eng. Cyc.*

PHRAT or *Frat*, also *Al-Farah* and *Al-Farat* of the Arabs, is the Euphrates river. Phrat is mentioned in Scripture, and is said to have two derivations from the Hebrew, *Phar* or *Pharatz*, to spread, and *Pharah*, to produce fruit or flowers. *Fariat*, in Arabic, means abundance. The Euphrates rises in the mountains of Armenia by two principal sources. At Korna, it and the Tigris unite and form the Shatt-ul-Arab, which falls into the Persian Gulf about 50 miles from Bassora.—*Vincent*; *Kinneir's Geog. Memoir*, p. 8.

PHRYNIUM DICHOTOMUM. *Roxb.*

Maranta dichotoma, *Wall.* | *Theen*, . . . *Burm.* Very plentiful in the forests of the Pegu and Toungoo districts. It is said to afford a strong fibre.—*McClelland*.

PHTHAH, the creative power of the Egyptians. See *Kneph*; *Osiris*.

PHUL. *Hind.* A flower, a head ornament; also the first distilled spirits (see *Ek-atisha*), technical in *Karnal*; also a sort of sal-ammoniac. *Mahadeo-ka phul*, *Daphne cannabina*; *Paighambari phul*, *Arnebia echioides*; *Tulenni phul*, *Hamiltouia suaveolens*; *Phul-sola*, *Æschynomene aspera*.

Phul charhana, or *Ziarut*, or *Tija*, a Muhammadan funeral ceremony.

Phul ki chuddur, a covering of flowers.

Phul pahanua, a Muhammadan ceremony.

Phul ka tabaq, the fairy flower tray.

Phul soongni, any sweet-scented flower enclosed in a piece of cloth for the bride to smell.

Phulel-ka-tel, an odoriferous oil made by placing sweet-scented flowers in three or five successive patches, over gingelly oil-seed, and then expressing the oil.

Phula-Dola. In the astral worship of the Hindus, Vishnu is the object. The *Phula-dola*, or *Floralia*, in the vernal equinox, is so called from the image of Vishnu being carried in a dola or ark, covered with garlands of flowers (*phula*). Again, in the month of Asar, the commencement of the periodical rains, which date from the summer solstice, the image of Vishnu is carried on a car, and brought forth on the first appearance of the moon, the 11th of which being the solstice, is called 'the night of the gods.' Then Vishnu reposes on his serpent couch until the cessation of the flood on the 11th of Bhadoon, when he turns on his side.

Phuli, in *Ladakh*, a salt used in infusing tea.

PHULJHAR is one of the clusters of states formerly known as the eighteen *Garhjat*, and is now included amongst the ordinary *khalsa* zamindaries of the Sumbulpore district. The census returns of 1866 give the population at 32,721. The agricultural classes are chiefly *Agharia*, *Kolta*, and *Gond*, but there is a sprinkling of other castes, such as *Brahmans*, *Mahautis*, *Telis*, *Malis*, etc. A few *Khonds* are also settled here and there.

PHURRA, leaves of the *Chamærops Ritchieana*, which are brought from Baluchistan into Sind, and made into baskets, fans, brushes, sieves, sandals, pouches, platters, and ropes.—*Sim. Dict.*

PHWON or *Mwoon*, a Shan tribe on the Irrawadi, to the north of Bamo, who describe themselves as emigrants from a country to the N.E. called *Mo-toung*, also *Moo-long*. Their language is said to be distinct.

PHYIPA.

PHYIPA, a marmot in the Bhot countries, in whose burrowings gold is found. It is supposed to be the country of the Issedones, alluded to by Herodotus.—*Latham*.

PHYLACTERY. Plutarch, a Roman author, mentions the Bulla, as suspended from the necks of the more noble Roman boys, as a phylactery, or preservative of good order, and as it were a bridle on incontinence. But it is not improbable that some of the Jews in the Saviour's time, as they certainly did afterwards, regarded their phylacteries as amulets or charms, which would keep or preserve them from evil. There is a remarkable passage in a rabbinical Targum, written about 500 years after Christ, which may both serve to illustrate what Christ says, Matthew xxiii. 5, and to show what was the notion of the more modern Jews concerning their phylacteries. It runs thus: 'The congregation of Israel hath said, I am chosen above all people, because I bind the phylacteries on my left hand and on my head, and the scroll is fixed on the right side of my door, the third part of which is opposite to my bed-chamber, that the evil spirits may not have power to hurt me.'—*Rasmala, Hen. Annals*, ii. 409.

PHYLLANTHUS, a genus of plants belonging to the Euphorbiaceæ, several of them being arborescous. The more important species are noted below, but there are about fifty species in Eastern and Southern Asia, few of them of economic importance. The bark of *Phyllanthus Nepalensis*, Mull., of Nepal, is used in tanning. *Ph. bicolor* is a timber tree of Darjiling.

PHYLLANTHUS DISTICHUS. Mull.

<i>P. longifolius</i> , Roxb.	<i>Cicca disticha</i> , Linn.
<i>Loda nori</i> , BENG.	<i>Arunelli</i> , TAM.
<i>Thin-bo zi pyu</i> , BURM.	<i>Russa usareki</i> , TEL.
<i>Harfaruri</i> , Chalmeri, HIND.	

Cultivated for its edible fruit.

PHYLLANTHUS EMBLICA. Linn.

Emblia officinalis, Gortn., W. Ic.

<i>Amloj</i> , ARAB.	<i>Amalaca</i> , SANSK.
<i>Emblie myrobalan</i> , ENG.	<i>Topu nelli</i> , <i>Topa nella</i> TAM.
<i>Aola</i> , <i>Anola</i> , <i>Amla</i> , HIND.	<i>Usirika</i> , TEL.
<i>Nelli</i> , MALEAL.	

This valuable good-sized timber tree is very abundant in almost every dry jungle and forest throughout the Madras Presidency, particularly about the lower slopes of mountains, which it ascends to rather over 4000 feet elevation; it is also found in Ceylon, Bengal, Burma, and Malacca, China, Java, Borneo, and Japan, and it is often cultivated in native gardens, and about temples. This plant is held sacred to Siva, and its leaves are used in worshipping that deity, as also his consort Durga or Kali. The Bengal Hindus, however, do not hold it in veneration, but those of the North-West Provinces annually worship it on the festival of the Sivaratri. It is worshipped by agriculturists in the west of India, on the 11th of Phalgun. A yellow or red thread is tied round the trunk of the tree. Libations are poured at the roots, and prayers and songs are recited in honour of the plant. Its flower is deemed cooling and gently aperient, and is prescribed in conjunction with other articles in the form of electuary. The fruit is used abundantly, fresh or dried, as a condiment, being pickled; also in dyeing, and to wash the hair with. The fruit is very acid and astringent, and contains gallic acid. The fruit has been supposed beneficial as an adjuvant in treating

PHYLLOXERA VASTATRIX.

scurvy. The fruit resembles the gooseberry, having a sharp acid juice, and is eaten raw by the natives, and is sometimes made into preserves. The bark is strongly astringent, and is used for tanning leather.—*Ainslie*; *Riddell, Genl. Med. Top.*; *Beddome*; *Gamble*. See *Dyes*.

PHYLLANTHUS POLYPHYLLUS. Willd.

A very common shrub or small tree in the northern parts of Ceylon.—*Thunb.*

PHYLLANTHUS RETICULATUS. *Poir.* A shrub of the Coromandel side of India, the Konkan, and Bengal, with a white and durable wood, employed by the hill people for various economical purposes. It is frequently employed for ornamental hedges. Cattle eat the leaves.—*Roxb.*

PHYLLIUM SICCIFOLIUM, walking leaf insect. The true leaf insects of Eastern Asia belong to this genus. They are of the size of a moderate leaf, which their large wing-covers, and the dilated margins of the head, thorax, and legs, cause them to resemble. The veining of the wings, and their green tint, exactly correspond to that of the leaves of their food-plant, and as they rest motionless during the day, only feeding at night, they the more easily escape detection. Most of the tropical Mantidæ and Locustidæ are of the exact tint of the leaves on which they habitually repose, and many of them, in addition, have the veinings of their wings modified so as exactly to imitate that of a leaf. This is carried to the furthest possible extent in the wonderful genus *Phyllium*, the 'walking leaf,' in which not only are the wings perfect imitations of leaves in every detail, but the thorax and legs are flat, dilated, and leaf-like, so that, when the living insect is resting among the foliage on which it feeds, the closest observation is often unable to distinguish between the animal and the vegetable. See *Phasma*.

PHYLLLOCLADUS TRICHOMANOIDES, a valuable timber tree of New Zealand. It is the Sanekaha or Tana Raa, or Tawai or Toatoa, or pitch-pine of New Zealand, grows to 60 or 70 feet high, and 14 or 15 feet in circumference. Its timber is white, hard, heavy, and of good quality, but not so durable as that of the *Kawri* pine. It bark is used as a red or black dye.—*G. Bennett*, p. 412.

PHYLLOSOMA, a genus of the crustacea.

<i>Phyllosoma communis</i> , <i>Edw.</i> , African and Indian seas.
<i>P. stylifera</i> , <i>Edw.</i> , Indian Ocean.
<i>P. affinis</i> , <i>Edw.</i> , New Guinea seas.
<i>P. clavicornis</i> , <i>Edw.</i> , African and Indian seas.
<i>P. longicornis</i> , <i>Edw.</i> , New Guinea.
<i>P. Freycinetii</i> , <i>Edw.</i> , New Guinea.
<i>P. laticornis</i> , <i>Edw.</i> , Indian seas.
<i>P. Indica</i> , <i>Edw.</i> , Indian Ocean.
<i>P. brevicornis</i> , <i>Edw.</i> , African and Indian seas.
<i>P. stylicornis</i> , <i>Edw.</i> , Indian Ocean.

—*Eng. Cyc.*

PHYLLOSTACHYS BAMBUSOIDES. *Siebold*. A dwarf hardy plant of the Himalaya, China, and Japan. Its yellowish canes make excellent walking-sticks. *P. nigra*, *Munro*; *Bambusa nigra*, *Loddiges*, of China and Japan; grows to 25 feet high, and is known to have grown 16 feet in six weeks; stems nearly solid, and becoming black.—*Griffiths*; *Von Mueller*.

PHYLLOXERA VASTATRIX is an aphid low form, hardly better than the common coccus or scale insect, seen in almost every English

greenhouse. Out of reach underground, coursing up and down every root and rootlet, it sucks and saps, until the vine above slackens in growth, and slowly dies of starvation.

PHYMATEA PUNCTATA. *D.* One of the Orthoptera. This large, well-known, beautiful locust has a scarlet abdomen, and yellow and bronze above. Its ravages in Ceylon are not continuous in the coffee tree, but are occasionally very annoying. A swarm once settled on a field of one-year-old coffee, and gnawed the bark off the stems, causing them to throw out many shoots, and permanently disfigured five per cent. of the trees. They do not touch the Illuk grass, *Saccharum Konigii*, *Retz*, but seem only to attack cultivated plants and trees. At Tangalle they destroyed tobacco plantations, and at Matillee in Kandy the native grain crops were injured by these locusts. The larvæ and pupæ are as destructive as the perfect insects, but this seems, fortunately, the only species of locust that does any real injury in Ceylon, and this injury is in importance not to be compared with that done by other species in other countries.

PHYOO. *Burm.* A tree of maximum girth 1½ cubits, and maximum length 17 feet. Abundant in Tavoy and Mergui, also in less abundance in Amherst province. When seasoned, it floats in water. It has a tolerably good strong wood, but not with much tenacity of fibre.—*Capt. Dance.*

PHYSALIA PELAGICA. *Lamurek.*
P. coravella, —? | *Holothuria physalis*, *Linn.*

This is one of the *Acalephæ*, is the Portuguese man-of-war and Guinea ship of the English, and the frigate and galere of the French. It occurs in all the great seas. Its body is an oblong bladder filled with air, with a peak-like projection at one end, beneath which are many tentaculæ, some short and thick, others several feet long, which it wraps round the hands, and inflicts painful stings, giving rise to constitutional irritation, and leaving a numbness. It is moved along the surface of the water by the inflated oblong bladder, which catches the wind, and glows in delicate crimson tints when floating on the waves, while its long tentaculæ, of a deep purple colour, extend beneath to aid in the capture of its prey. When handled, the long thread-like appendages, wrapped over the hands and fingers, inflict a pungent pain by means of an acrid fluid discharged in them. *Physalia utriculus* is also the Portuguese man-o'-war.—*Bennett.*

PHYSALIS ALKEKENGI. *Linn.* The winter cherry or strawberry tomato is a native of Europe on exposed hills, and of Persia and Japan. The corolla is a dirty white, the calyx reddish-yellow, enclosing a red berry. Its fruit was well known to the ancients, and is described by Dioscorides. In England the plant is cultivated chiefly on account of its appearance. The berries have a subacid and not unpleasant flavour, but the persistent calyx with which they are invested is very bitter. *MM. Dessaignes* and *Chautard* analyzed it, and succeeded in procuring a bitter substance, which they called physaline, forming a light white powder with a very slight shade of yellow, leaving in the mouth after a time a very marked taste of bitterness. *Honigberger*, p. 324, tells us that its fruit (*Halicacabum*), the winter cherry, is what the easterns call *Kaknuj*, which the British apply to *P. flexuosa* or *somnifera*, as

this is the name of the plant in the lower parts of Hindustan, in Bengal? The winter cherry is used by the Hakims as a diuretic, and in ulceration of the urinary bladder. It is said to be purgative, and is much used in veterinary medicine. The winter cherry is now regarded as useless.—*Eng. Cyc.*; *Ind. Ann. Med. Sci.* for April 1856, p. 384; *Honig.* p. 324; *Hogg*; *Voigt.*

PHYSALIS ANGULATA. *Linn.*
Country gooseberry. | The tooth-leaved winter
Winter cherry. | cherry.
Jouz-ul-nuruj, . . . *ARAB.* | *Agni-munda*, . . . *SANSK.*
Poplah, *DUKH.* | *Takali pallam*, . . . *TAM.*
Kaknuj, *PERS.* | *Takkali pundu*, . . . *TEL.*

This was introduced from Malacca, and has got the name of country gooseberry in India, from its resemblance in taste to that fruit. It is a small bush.—*Ainslie*, p. 233; *Roxb.*; *Voigt.*

PHYSALIS PUBESCENS. *L.* Downy winter cherry, the Camara of Brazil, is a native of America, cultivated in the East Indies. The whole plant is densely clothed with down. The corolla is yellow, marked with five round brownish-violet spots at the throat. The berries are yellowish when ripe; they are called gooseberries, or Brazil gooseberries, and when preserved with sugar make an excellent jam.—*Eng. Cyc.*; *Genl. Med. Top.* p. 183; *Mason.*

PHYSALIS SOMNIFERA. *G. Don.*
Var. a. Physalis flexuosa, *Linn.*
P. somniferum, *var. flexuosa*, *Hort. Cal.*
Phyllanthus urinaria, *Linn.*

Ashwagundha, . . . *BENG.* | *Ankalang*, . . . *TAM.*
Flexuosa winter cherry. | *Amukanam*, . . .
Asgandh, Kaknuj, *HIND.* | *Penneru aswagandhi*, *TEL.*
Pevetti, . . . *MALAL.* | *Pilli vendram*, . . .

A native of rocky places on the sea-coast of the south of Europe. Grows all over India. It has several shrubby branched stems, round and downy. The leaves are in lateral pairs, short-stalked, ovate, downy, and from 2 to 4 inches long. The flowers are of a greenish-yellow or white. The berry is red and smooth, and about the size of a pea. This plant is the *Σπέρχνος ὕπνωτικός* of Theophrastus (*Hist. Plant.* 9, 12), and the *Σπέρχρον αλιφακίων* of Dioscorides (4, 72). It is reputed to be narcotic, diuretic, deobstruent, and alexipharmic. The leaves steeped in oil are in India applied to inflammatory tumours, and they are used in a similar way in Egypt. Kunth recognised this plant in Egyptian mummies.

Var. b. Physalis Peruviana, *Linn.*, *Roxb.*
Tophlee, Teperiya, *BENG.* | *Tapuria, Macao*, . . . *HIND.*
Pung-ben, *BURM.* | *Budda busara*, . . . *TEL.*
Cape gooseberry, . . *ENG.* | *Budama, Busara kaya*, . .
Peru winter cherry, . . | *Pambudda*,
Brazil gooseberry, . .

This variety is the *P. Barbadosensis*, *Lam.*; *P. edulis*, *Sims*; *P. esculenta*, *Willd.*; *P. latifolia*, *Lam.*; *P. pubescens*, *Linn.*, *Herb.*; *P. tomentosa*, *Medic.*, and *P. tuberosa*, *Zucc.* Grows luxuriantly in India in a good soil. The seed should be sown at the commencement of the rains. The young plants when about six inches high should be set out in rows at least two feet apart from each other, sufficiently wide apart, in fact, to allow the gardener to pass easily between them. They may be grown either on sticks or on trellis, and should be carefully pruned. The young shoots bear the finest fruit, and, if carefully attended to, will bear almost all the year round, the excellence and abundance of the fruit well repaying for extra

care bestowed on the cultivation of the plant. It is a most wholesome and useful fruit; none more so for tarts, or even for dessert, and for making jam or preserve. The bush should every now and then be carefully pruned, cutting out the old wood, as the new shoots provide the finest flavoured fruit.—*Eng. Cyc.*; *O'Sh.*; *Irvine*, pp. 123, 183; *Honig*. p. 324; *Riddell*; *Rozb.* i. p. 562.

PHYSIC-NUT TREE, *Jatropha curcas*. The leaves, warmed and rubbed with castor-oil, are used as a poultice to hasten suppuration; seed excessively drastic. The milky juice boiled with oxide of iron makes fine black varnish, the juice dyes linen black; the embryo is said to be the source of the purgative element, and that by removing the embryo the nut becomes bland and alimentary; MM. Fee and Humboldt support this opinion. The physic-nut is a powerful cathartic, one seed, or three or four drops of the expressed oil, being a sufficient dose. In the Dekhan, this plant is used as a hedge from its easy growth; it flowers in the rains. Physic-nut oil, called Jangli erandi ka tel, HIND., Kaat-amunak, TAM., and Adavi-amada-poo noonay, TEL., is a beautiful pale yellow oil procured from the seeds of the angular-leaved physic-nut, and it is used by the natives in medicine and as a lamp oil. About 700 tons of this oil were imported into Liverpool in 1850 from Lisbon, for the purpose of dressing cloth, burning, etc. It has been imported into England as a substitute for linseed oil. The colour is somewhat paler than the best linseed oil. It can be obtained in some parts of the country where it is plentiful, for little more than the cost of manufacture. It is now chiefly used in lamps. At the Madras Exhibition of 1855, a light straw-coloured specimen was shown by Lieutenant Hawkes, and several good but rather high-coloured samples from the Tanjore and Travancore Local Committees and the Madras Tariff. The glaucous-leaved physic-nut is the *Jatropha galea*. — *Mason*; *O'Sh.*; *Simmonds*; *Riddell*.

PHYSOSTOMI, an order of fishes of the sub-class Teleostei.

PHYTELEPHAS MACROCARPA. Ivory nut. Palma de marfil, . . Sp. | Marfil vegetal, . . Sp.

The seeds of *Phytelphas macrocarpa* of New Grenada constitute the vegetable ivory used in turnery for chessmen, etc. The trunk seldom rises more than a few feet, trailing frequently 20 feet upon the ground. The seeds are produced, seven to nine together, in hard clustered capsules, each head of six or seven of which weighs about 25 lbs. when ripe.

PHYTOCRENE GIGANTEA. *Wall.* A gigantic climber of the forests of Chittagong and Burma. Its stem on being cut gives out a quantity of fresh water good for drinking. Its wood structure is curious.—*Gamble*, p. 80.

PHYTOLACCACEÆ. *Lindl.* The Virginian Poke tribe of *Phytolacca*, *Rivina*, *Gisekia*, and *Bosea*. *Phytolacca acinosa*, *Rozb.*, is from Nepal, where the leaves are eaten after boiling. *P. decandra*, North America; the root is very nearly equal to ipecacuanha, but its use is sometimes attended with slight narcotic symptoms. It is also used as an external application in itch and tinea capitis. *P. dioica*, *L.*, a beautiful tree of South America, introduced into Spain, where it

is planted to shelter public promenades. *P. icosa-andra* is a herbaceous plant. A tincture from the ripe berries has the reputation of being a remedy for chronic rheumatism and syphilitic pain.—*Riddell*; *O'Sh.*

P'L. CHIN. Skin of the animal body.

PIADAH. HIND. A peon, a footman. *Papiadah*, on foot.

PIAL or **Pyal**. TEL. The verandah of a house; in Urdu, *Pandal*.

PIALA. HIND. A cup, a phial. Amongst the Rajputs the cup for opium solution. Colonel Tod relates how a Rajput chief with courtesy invited another to his castle, entertained him, and pledged his health and forgiveness in the 'munwar piala.' They made merry, and in the cup agreed to extinguish the remembrance of the feud. *Munwar piala* is a favourite expression, and a mode of indicating great friendship: 'to eat of the same platter (thali), and drink of the same cup (piala).' *Piala*, the touch-hole of a cannon. — *Tod's Rajasthan*.

PIASSABA FIBRE, from the leaf-stalks of *Attalea funifera*, *Mt.*, and *Leopoldinia piassaba*, *Wallace*, a valuable palm of the native forests of the maritime provinces of Brazil. The fibres of its leaf-stalks and other parts furnish the best cordage of South America. A coarse black fibre is obtained from the dilated base of the petioles. It is collected by the natives, and partly used for home consumption, partly exported to Europe, tied up in bundles of several feet in length, and sold in London under this name at about £14 the ton. It is manufactured into cordage in its native countries, and as it is light, cables made of it do not sink in the water. A cone of Honduras is another important species, very abundant in its native country. The nuts, which grow in clusters of several hundreds, yield a valuable oil. These should be introduced into India.—*Seeman*; *Dr. Spruce in Linnæan Journal*.

PIASTRE. The value of the Eyn piastre varies from 2s. to 2s. 6d.—*Rich's Kurdistan*.

PICA, a genus of birds. *P. caudata*, the magpie of Europe, W. Asia, Siberia, N.E. America, China? Japan? is replaced in Afghanistan and W. Tibet by *P. bactriana*, in E. Tibet by *P. bottanensis*, in China and Japan (?) by *P. media*, and Barbary by *P. mauritanica*. See *Pie*.

PICE, Anglo-Hind. for *Pysa*, a copper coin of which four go to the anna, precisely an inch in diameter, weighing 100 grains troy, which is a legal tender for one sixty-fourth of the India rupee, and the double pice weighing 200 grains for one thirty-second of the rupee. This name is applied to a weight, a variable division of the seer, ranging in different localities from 156½ grains up to 276½ grains.

PICHAURA. HIND. One of the pair of drums called 'tabla.'

PICHILI. HIND.? BENG.? A sort of cap worn by men in Birbhun.

PICKKARI. HIND. A stomach-pump; syringe for injection.

PICHOOLEE. URIYA.? A large creeper very common in Ganjam and Gumsur, with a circumference of 1½ feet. The bark is used medicinally for wounds and contusions.—*Captain Macdonald*.

PICIDÆ, the woodpecker family of birds, of which there are six sub-families, many genera and species, in the East Indies. See *Birds*.

PICKLES.

PICKLES.

Saumure, Marinade, Fr. | Salamoia, Ir.
 Pökel, GER. | Salmuera, Sp.
 Achar, HIND.

Pickles are largely made and used by the natives of the East Indies, and are largely imported for European consumption. The mango and the tamarind, with capsicum, salt, spices, and sugar, in vinegar, are the more common substances used by the people; but the potato, cabbage, the fruit of the caper, the cayenne, ginger, onion, apple, tomato, turnip, also are pickled in vinegar; the mango and the citron are in oil. 'Chatni' has many varieties, composed of mango, tamarind, with red pepper, common salt, spices, sugar, vinegar, and a number of other ingredients, varied according to the taste of the maker, or according as is wished to produce a hot, sweet acid, or pungent 'chatni.' All these articles are used as relishes by natives, with their dhal, and rice, and chapatties. The native pickles are prepared with native vinegar, being generally sugar-cane juice fermented till it turn acid.—*Haasal; Powell.*

PICRASMA JAVANICA, Bl., of Burma, one of the Simarubæ, has a soft white wood. *P. Nepalensis, Benn.*, is a small tree of Nepal and the *Khasya*. *P. quassoides, Benn.*, is a tall shrub of the Outer Himalaya, from the Chenab to Nepal, up to 8000 feet. Its bark is used as a substitute for quassia.—*Gamble, p. 64.*

PICRORRHIZA KURROO. Royle.

Veronica Lindleyana, Wall. Cat.

Tita, BENG. | Kali kutki, HIND.
 Bitter root, . . . ENG. | Kurroo, Karru, . . PANJ.
 Pathan bed, . . . HIND. | Hoon-ling, . . . TIB.

This plant grows in Gosaintan, Rampur, Sungnam, Kamaon, and Kedarkanta, on all the hills of the Himalaya, as also in the Kashmirian mountains. It is a fleshy-rooted perennial. Flowers sessile, deep blue, in dense spikes. The root is intensely bitter, and used as a medicine in India, at Lahore, more in veterinary than in human medicine. Tita or teeta is a general name given in Bengal to the roots of bitter herbs, but is given in East Nepal and in the Yaloong valley to the Picrorrhiza. It is a plant allied to speedwell, and grows at from 5500 to 15,000 feet elevation, and is a powerful bitter. The term Kali kutki is applied also to black hellebore, the *Helleborus niger*, an acrid purgative and poison. The Picrorrhiza root is exported to the plains, is one of the regular febrifuges, and is given for ascites and applied in plaster. Part of the Karru sold is the root of *Gentiana kurroo* (q.v.), and some of it is possibly produced by other plants.—*Hooker's Jour. i. p. 272; Cleghorn's Panj. Rep. p. 67; Powell, i. p. 362; Stewart; O'Sh.; Hough. p. 325.*

PICTURE PLANT, *Graptophyllum hortense*, *Justicia picta*, variegated leaf, blood-red leaf. One variety has variegated leaves, and the other deep purple.

PICUL, a weight of China = 133½ lbs. English.
 14 oz. English = 1 Tael. | 100 Catty = 1 Picul.
 16 Tael = 1 Catty.

PIDDINGTON, HENRY, long coroner in Calcutta, was a merchant seaman. He published various scientific papers on Economic Geology, and afterwards Researches on the Law of Storms, the latter requiring an amount of patience and industry which can only be correctly estimated and appreciated by those engaged in pursuits of

PIERIS.

a similar nature. He published 24 Memoirs of Cyclones that had occurred between 1780 and 1851; and issued also The Sailor's Hornbook of Storms, which has gone through six editions. He showed the circular and progressive character of cyclones, and that north of the equator they circled from right to left, or against the hands of a watch. He contributed notices to the Agricultural and Horticultural Society, on the soils best suited for the cultivation of tobacco, coffee, sugar, cotton, and the tea-plant; on the manufacture of indigo; the artificial production of cotton; on the mode of preparing Manila hemp; on the prevention of contagious diseases amongst cattle, and on the disease called Bosonto, which attacks the cattle of Bengal. He also published, as a part of Prinsep's Useful Tables, a Tabular View of the Generic Characters of Roxburgh's Flora Indica, a work requiring a considerable amount of labour and care in the compilation, and effecting a saving of time to the botanical student; but perhaps the most useful of his labours in this department was his English Index to the Plants of India, published 1832. In 1839 he printed, for private circulation, a treatise on the Scientific Principles of Agriculture considered as a branch of Public Education in India (which was published in 1854).

PIDGIN or Pigeon, an Anglo-Chinese corruption for the word business.—*Coll.*

PIE. HIND. A small copper coin of British India, the third part of a pice, and 12 of which go to one anna.

PIE or Magpie, the genus *Dendrocitta*, *Gould*, called also tree-crows, are of strictly arboreal habits.

D. rufa, Scopoli, the common Indian magpie, all India.
D. pallida, Blyth, the pale magpie, N.W. Himalaya, Kashmir, Afghanistan.
D. sinensis, Latham, the Himalayan magpie, all British India.
D. frontalis, McClelland, the black-browed magpie, all India.
D. leucogastra, Gould, the long-tailed magpie.
D. rufigastra, Gould, South Asia.
D. occipitalis, Mull., Sumatra.

D. rufa and its ally the red-vented pie (*D. sinensis*), affect the same situations; and although *D. rufa* is not so domestic in habits, and less often met with in the neighbourhood of dwellings, it is plentiful in copses and jungles. Others of this family are *Temia* varians and *T. cucullata* of Burma; *Glaucoptes aterrimus, Temm.*, of Borneo, with *G. leucopterus* and *G. temnurus* from Malacca.—*Adams.* See Pica.

PIENCHE. TAM. A Ceylon tree with wood of a dark colour, and very heavy and close grained. It grows to about 12 inches in diameter, and 14 feet in height. From this tree the native carpenters make the frames of vessels, it being considered durable. It produces a fruit which is of no use.—*Edye, Ceylon.*

PIERARDIA DULCIS is the Rambeh or Ramboi of the Malays. Another species, *P. sapida*, the *Baccaurea sapida, Mull.*, also yields an edible fruit. It is found in the district of Tiperah, to the eastward of Calcutta, and also in China, where it is cultivated for its agreeable fruit; it is there called Lutqua, and is called Lutco by the Hindus on the eastern frontier of Bengal.—*Eng. Cy.*

PIERIS, a genus of plants, small trees. *P. lanceolata, Don*, of the Khasya Hills; *P. formosa*,

Don, and *P. ovalifolia*, *Don*, of the Himalaya. The young leaves of the last are used to kill insects; they are poisonous to goats, and an infusion is used in cutaneous diseases.—*Gamble*.

PIETRO DELLA VALLE travelled in Persia in 1614–23? and his book is known as *Viaggi in Turchia, Persia, et India*. He visited Cambay A.D. 1623, and wrote in the last days of the reign of Jahangir (1605–1627).

PIG.

Chu, CHIN. | Pindl, TEL.
Sur, Bura Janwar, HIND.

The ordinary name for the wild and domesticated species of swine. There are many domesticated varieties. The hunt of the wild boar, called pig-sticking, is a favourite amusement of the British officers in India. They hunt on horse-back, and use spears,—in Northern India with short spears, which are jobbed down on the boar; in the Dekhan with long spears, which are held firm in the armpit. The wild boar of Celebes is peculiar, but the Babirusa or pig-deer there has long and slender legs, and the male curved upper tusks turned back so as to resemble horns. It feeds on fallen fruits. It is found in the Celebes, in the Sulu Islands, and in Borneo. Pigmy hog (*Porculia sylvania*) of the submontane Himalayan regions. These little creatures, 7 or 8 lbs. in weight, are perfect little wild pigs, and are active, healthy, and strong. See *Sus*.

PIGAFETTA. Antonio Pigafetta, the companion of Ferdinando de Magalhães.

PIGEON ISLAND, or Netrun Island, on the W. side of the Peninsula of India, in lat. 14° 1' N., and long. 74° 19' E., is 10 miles from the main. It rises abruptly out of 16 or 17 fathoms of water to a height of 300 feet, and may be seen from a distance of 25 or 30 miles. Another of same name is off the Vizagapatam coast, in lat. 17° 33' N., long. 83° 14' E.

PIGEON-PEA, *Cajanus Indicus*, is the seed of the plant called by Linnaeus, *Cytisus cajan*, and by De Candolle, *Cajanus bicolor*, *C. flavus*, and *C. Indicus*. It is a pulse highly esteemed by all classes of the natives of India, and known as Dhal, Tour-ka-dal.

PIGEONS are classed by naturalists in the order *Gemitores*, which Jerdon (ii. 441) thus arranges:—

ORDER, GEMITORES, Pigeons.

Fam. Treronidae. *Sub-Fam.* Treroninae, Green Pigeons. *Treron Nepalensis*, thick-billed green pigeon, also *T. aromatica*, *T. axillaris*, *T. curvirostra*, and *T. psittacea*.

Crocopus phœnicopterus, Bengal green pigeon, also *C. chlorogaster* and *viridifrons*.

Osmotreron bicincta, orange-breasted green pigeon, also *O. Malabarica*, *Phayrei*, and *flavo-gularis*.

Sphenocercus sphenurus, Kokla green pigeon, also *S. apicaudus*, *Korthalsi*, *Oxyurus*, and *Sieboldi*.

Sub-Fam. Carpophaginae, Fruit Pigeons.

Carpophaga sylvatica, the green imperial pigeon; also *C. inularia*, *ceæna*, *chalybura*, *insignis*, *basilis*, *cineracea*, *lacernulata*, *paulina*, *rosacea*, and others.

Fam. Columbiidae. *Sub-Fam.* Palumbinae, Wood Pigeons. *Alsecomus puniceus*; also *A. Hodgsoni*, *Palumbus caesioides*; also *P. pulchricollis*, *Elphinstoni*, and *Torringtonii*.

Sub-Fam. Columbinae, Rock Pigeons.

Phumbona Evertsmani, *Columba intermedia*, the blue rock pigeon; also *C. rupestris* and *leucocenta*.

Sub-Fam. Macropyginae, Cuckoo Doves.

Macropygia tussalia; also *M. rufoceph*, *rufopectus*, *macrura*, *phasiabellæ*,

Sub-Fam. Turturinae, Turtle Doves.

Turtur rupicolus; also *T. meena*, *Cambayensis*, *Suratensis*, *risoria*, *humilis*.

Fam. Gouridae. *Sub-Fam.* Phapinae, Ground Doves.

Chalcophaps Indicus; also *C. Javanicus*, *augusta*, *chrysochloris*, *longirostris*.

Sub-Fam. Calaminæ.

Calanus Nicobaricus.

Sub-Fam. Gourinae.

Goura coronata; also *G. Victoriae*.

Some Ceylon pigeons live entirely on trees, never alighting on the ground; others, notwithstanding the abundance of food and warmth, are migratory, allured, as the Singhalese allege, by the ripening of the cinnamon berries, and one species is known in the southern provinces as the cinnamon dove. A very beautiful pigeon, peculiar to the mountain range, discovered in the lofty trees at Newerallia, has been named *Palumbus Torringtonii*.

Columba intermedia, blue pigeon.

C. livia, *Blyth*. | Pagoda pigeon.

Kabutar, HIND. | Kovil pora, TAM.
Parivi, MAHR. | Gudi-purai, TEL.

The blue pigeon is the most common in India of all the pigeons. They congregate in large numbers, and breed wherever they can find suitable spots, on pagodas, mosques, and tombs. The common blue pigeon of India differs from the *C. livia* of Europe only in having an ash-coloured instead of a pure white rump. The *C. livia* of Europe, or rock pigeon, with its sub-species, is the parent form of all domesticated pigeons. Of these there are four groups, with at least 150 varieties, consisting of—

Poulters.

First, the German, Dutch, and English.

Second group includes the Kali-par, Murassa, Bussora, Dragon, and English carrier; the Bagadotten, Scanderon pigeon, cygne riente, the tronfo, and the bank.

Third group includes the Java and English fantail, the turbit, and African owl; the Persian lotan, common and short-faced tumblers; the Indian frill-back and jacobin.

Fourth group includes the dovescot pigeon, swallow, spot, nun, English frill-back, laughter, and trumpeter.

Columba livia is the rock-dove of Europe, North Asia to Japan, N. Africa; abundantly replaced in India by the barely separable *C. intermedia*.

Columba aromatica of Latham, the Vinago aromatica, is of a mild and timorous disposition, and is generally seen in flocks or societies, except during the period of reproduction, when they pair, and retire to the recesses of the forest. The nest is simple, and composed of a few twigs loosely put together, and the eggs are two.

Carpophaga Forsteni, a fruit pigeon of N. Celebes.

Carpophaga oceanica, one of the nutmeg pigeons; many of both sexes are furnished with a large round fleshy caruncle on the bill, at the base of the forehead; this is said to be present during the breeding season only.

Carpophaga oceanica, *Selby*, is the *Columba oceanica* of Lesson, and according to Lesson is the Moulouesse or Mouleux of the natives of Oulan; it approaches the nutmeg pigeon, *Columba (Carpophaga) ceæna*, very nearly, but differs from it in size, being one-third less, and in the distribution of some of its colours. The nut-

PIGEONS.

meg pigeon lives more particularly in the Eastern Moluccas, and especially at New Guinea and Waigiou, while the oceanic fruit pigeon is abundant in the little isle of Ooulou, in the midst of the great archipelago of the Carolines, and seems to exist in the Pelew Islands; it may possibly spread over the Philippines and at Magindanao.

Geophilus Nicobaricus is the *Columba Nicobarica* of Latham, the *C. gallus* of Wagler. It inhabits the Nicobar Islands, Java, Sumatra, and many of the Moluccas.

Turtur kumilis, the Asiatic pigeon, is somewhat common in the Panjab.

Lophyrus coronatus is the *Columba coronata* of Latham; *Phasianus cristatus* Indicus of Brisson; *Columbi Hocco*, *Le Vaill.*; *Colombe Galline Goura*, *Tenn.*; great-crowned pigeon, *Edw.*; and is a species surpassing in size all the other *Columbidae*. Total length, from 27 to 28 inches. This bird is found in many of the islands of the great Indian group. Not rare in Java and Banda, abundant in New Guinea and in most of the Moluccas. Nest built in trees; eggs two; cooing of the male hoarse, accompanied by a noise somewhat like that of a turkey-cock when strutting. Its food consists of berries, seed, grain, etc. Flavour of the flesh said to be excellent.

Goura coronata, the crowned pigeon, and the Victoria crowned pigeon, *G. Victoriae*, are noble birds of New Guinea and its adjacent islands. *G. Victoriae* from Jobi Island, has a red-brown breast, grey wing spot, and a beautiful white-tipped vane surmounts the crest. Like the passenger pigeon, and all the fruit-eating pigeons of the genus *Carpophaga*, they lay but one egg. Recent writers name them *Bipositores*.

Australia is rich in pigeons; the most desirable to acclimatize is the wonga-wonga, and the most graceful is the crested dove. The latter breeds very freely in confinement, when suitably accommodated. The wonga-wonga, a shy breeder, is the *Leucosarcia picata*. The bronze-wing pigeon is *Phaps chalcoptera*. The crested dove is *Ocyphaps lophotes*.

Pigeons of Fiji are *Chrysoena viridis*, *Layard*; *C. luteovirens*; *C. victor*, and *Carpophaga Pacifica*.

Pigeon-breeding is quite an oriental art; and a very good authority on the subject is an Arabic book translated into French in 1805 by De Sacy. A German translation was published by Herr Lœper.

Carrier pigeons have been trained in Europe for many useful purposes, latterly carried by fishermen seawards and liberated, with information as to the captures. They are much used by the Chinese for sending messages from town to town, conveying the market prices and exchange rates. They fly from Su-chan and Shanghai, 80 miles, in three hours. Two of the leading continental nations maintain pigeon-breeding establishments to supply fortresses and armies in the field with carrier pigeons. The Greeks employed pigeons for making known the names of victors in the Olympic games; the Romans likewise used them. From A.D. 1146 to 1256, the date of the Mongol invasion, the Baghdad khalifs used pigeons regularly for the transmission of correspondence. The Turks had carrier pigeons; and their Sultan Suliman maintained a pigeon post between Constantinople and Ofen, the distance, 170 geographical miles, being accomplished in 24 hours. In Egypt, in the

PIKOTA.

15th century, communications by pigeon were kept up between Cairo and Alexandria, Cairo and Damietta, Damascus and Tripoli. In Arabia and Persia, pigeon posts were found in existence by European travellers as late as the 17th and 18th centuries.

Hindu pandits assert that Siva and his spouse, under the forms and names of Kapot-cswara (pigeon god) and Kapotesi, dwelt at Mecca. The dove was the device of the old Assyrian empire, because, it is supposed, Semiramis was preserved by that bird. The Meccan pigeons—large blue rocks—are held sacred, probably in consequence of the traditions of the Arabs about Noah's dove. Some authors declare that, in Mahomed's time, among the idols of the Meccan pantheon, was a pigeon carved in wood, and above it another, which Ali, mounting upon the prophet's shoulder, pulled down. This might have been a Hindu, a Jewish, or a Christian symbol. The Moslems connect the pigeon on two occasions with their faith: when that bird appeared to whisper in Mahomed's ear, and, secondly, during the flight to Medina. They are called 'Allah's proclaimers,' because their movement when cooing resembles prostration. Almost everywhere the pigeon has entered into the history of religion. At Mecca they are called the doves of the Kaba, and never appear at table. They are said to be remarkable for propriety when sitting upon the holy building. This may be a minor miracle.—*Eng. Cyc.*; *Jerdon's Birds of India*; *Cat. Birds, Beng. As. Soc.*; *Cat. Birds, India House Museum*; *Burton's Mecca*, iii. p. 218.

PIGMY DEER. The Chevrotin, or pigmy deer, are not much larger than hares.

PIGOT, LORD, for forty years a civil servant of the East India Company at Madras. He amassed a fortune of forty lakhs of rupees, and on visiting England 1774 he obtained an Irish peerage, and returned to Madras as Governor. He strove to preserve the purity of his government, suspended two of its members, and placed the commander-in-chief, Sir Robert Fletcher, in arrest; but the majority of the Council placed Lord Pigot in arrest. The Court of Directors ordered his restoration. Seven members of the Council were dismissed, 1776, and Sir Thomas Rumbold, a Bengal civilian, appointed Governor.—*Marshman*.

PIG'S TUBERS, Chul-ling, CHIN. These tuberiform bodies are of irregular size, and are compared by the Chinese to pig's dung; they are produced as an excrescence on the liquidamber tree, and used by the Chinese in fevers, fluxes, and urinary disorders.—*Smith's Mat. Med. China*.

PIGU, the Persian name of Buddhists, and for eastern Turks.—*Vamberg*, p. 88.

PIH-KEA-SO. CHIN. The hundred family lock; a lock purchased with money begged from friends, and put round a child's neck to lock it to life.

PIH-TE or Pak-tai is the great deity of the north, whom the Chinese believe existed before the world. He is regarded as the most beneficent of deities, and his temples are generally crowded with votaries; all persons embarking in trade seek his blessing. Five genii preside over the five elemental substances, fire, earth, water, metal, and wood, and in the fourth month of each year are honoured with banquets.

PIKOTA. TAM? A machine on the principle of a lever, for raising water from wells. It is

PIKU.

called Etamu in Telugu, and Yerram or Yettam in Tamil. It has a bucket (Etamu bakkena, TEL., Yetta chal, TAM.) suspended from a bamboo pole, Yetta kol.

PIKU, an apparatus used in Hazara for rice cleaning, etc.

PIKUL, equal to 183½ lbs. avoirdupois.

0 Cash	=1 Candarin.	100 Catty	= 1 Pikul.
0 Candarin	=1 Mace.	1 "	=16 Tael.
0 Mace	=1 Tael.	1 Tael	=1¼ oz. English.
8 Tael	=1 Catty.		

PIKUNI, female Buddhist mendicants.

PILAMA. SINGH. Statue of the Buddhist deity.

PILANG, a very hard wood of Java, employed in the eastern districts for the construction of ships' blocks, etc. Pung is equally hard with pilang, and is employed by the natives for pegs in constructing their prahus.

PILAVATA, in the Malealam country, a scarf permitted to be worn over the shoulders by people of high caste alone.

PILCHARDS. In the south of England pilchards are largely taken in nets, and efforts are being made to place them in the market like sardines in tins. Clupea pilchardus, the pilchard, is said to frequent the coast of Japan in the latter part of the month of June and commencement of July. They are taken by the seine nets. When fresh, they are sweet and nutritious, but they are chiefly valued for their oil, to obtain which they are piled up in heaps for 24 hours, are then boiled for some time in sufficient water to prevent their burning, then ladled into strong square presses, and the lever action of a lid presses out the oil. The oil, after cleaning, is used for lamps, and the refuse for manure.—*McCulloch's Com. Dic.*

PILGRIMAGES are extensively made by Hindus, and regarded as very meritorious. Of all the holy cities of the Hindus, Benares takes the first place; but the shrines at Hardwar in the Himalaya, Dwaraka in Gujerat, Jaganath in Orissa, Panderpur on the Kistna, Tripati in N. Arcot, Srirangam near Trichinopoly, and the island of Ramiseram, are all sacred sites to which Hindus resort. There may also be mentioned Abu, Anupshahr, Aror, Badrachalam, Badrinath, Bhadravār, Bhagulpur, Bhuvaneswar, Birbhun, Danta, Deogarh, Deoprayag, Ganga-Bal, Gaya, Gauhati, Govardhan, Kedarnath, Kurukshetra, Nasik, Parasmath, Puri, Rameswaram, Saugor Island, Sivaganga, Trichinopoly, Trembak. Of rivers, the Ganges takes the first place; but Hindus reckon five Ganga, viz. the Ganges proper, the Godavery, Kistna, Cauvery, and Tumbudra, and they have twelve holy rivers. The objects of the Hindus in making their pilgrimages are as varied as the human motives, passions, and desires, but chiefly to fulfil a vow or to implore benefits, or in penance. The bulk of the Hindus who make pilgrimages are usually in poverty, and beg from place to place. Many die on the roads, exhausted by the prolonged exertions. To visit their various sacred sites, from the source to the mouth of the Ganges and back again, occupies six years. With Muhammadans of the Sunni sect, Mecca and Medina are the chief pilgrimage cities; and the Shiah sect visit Medina and Karbala, and Ardabel, in lat. 38° 14' N., and long. 48° 21' E. The principal places for their minor pilgrimages are the tomb of Ali, called Mash'hid-i-Ali at Najf near Cufa, the shrine of Imam Husain at Karbala,

PILGRIMAGES.

and that of Imam Raza at Mash'bid in Khorasan, but the tombs of all the numerous Imam-zadeh and holy characters throughout Asia are visited. The minor pilgrimage to the Muhammadan saints of India is termed a Ziyarat, as distinguished from the Haj or great pilgrimage to Mecca in Arabia, but no Muhammadan except the Maliki is bound to pilgrimage unless he possess a sum sufficient to support himself and his family. The streets of Mecca, however, abound in pathetic Indian beggars, who affect lank bodies, shrinking frames, whining voices, and all the circumstance of misery, because it supports them in idleness. There are about 1500 Indians at Mecca and Jedda, besides 700 or 800 in Yemen. The Muhammadans of Sumatra and of Netherland India largely resort to Mecca.

Amongst the Christians, Jerusalem in Western Asia, and St. Thomé or Mylapore on the Coromandel coast, an outskirt of Madras, are the chief places of resort. An immense concourse of Christians visit every year, on the 29th September, the fountain of St. Michael near Ballynaskellig, on the coast of Kerry. Then the feast of St. Michael coincides with the autumnal equinox, and consequently with the sacrifices and the Baal-tinnes of the Druids, which also took place at this period. It is related that Arthga, son of Cathal, king of Connaught, took the pilgrim's staff, and set out for Hiona dia ailithre, a rock or upright stone, and itrialum, going round. Ailathre, used by the ancient Irish, is still employed to designate the pilgrimages to Iona, Jerusalem, or Rome.

The Buddhist pilgrims of Burma visit the great Shoa-y-dagon pagoda at Rangoon, and the pagoda at Prome, and all the southern Buddhists reverence the Anaradhapura temple in Ceylon.

With all these races and religionists, Hindus, Hebrews, Buddhists, Muhammadans, and Christians, the circumambulation of the shrine forms part of the pilgrim's duty. This was a Jewish practice, it is often mentioned: 'Walk about Zion, and go round about her, tell the towers thereof.' In India, pilgrim taxes were instituted by Muhammadan rulers on Hindus, but were abolished by an act passed by the British in 1840, and all interference with the religious ceremonies or temples of the natives discontinued.

Pilgrim's-tree, also called Rag-tree, is to be observed throughout Southern Asia, in Egypt, and in Africa. They are trees on which rags are suspended, and Buddhists, Hindus, and Muhammadans alike add to them. In the Peninsula of India, it is usually the common babul tree, *Acacia Arabica*. Burton says that some believe that Mahomed permitted the practice, and explain the peculiar name of the expedition called Zat-ur-Rukaat (place of shreds of cloth), by supposing it to be a term for a tree to which his followers hung their ex-voto rags. Huc in his travels mentions that the Tartars worship mountain-spirits by raising an 'obo,' dry branches hung with bones and strips of cloth, and planted in enormous heaps of stones. Park, also, in Western Africa, conformed to the example of his companions, in adding a charm or shred of cloth on a tree (at the entrance of the wilderness), which was completely covered with these guardian symbols. The *Tarikh-i-Tabari* mentions it as a practice of the pagan Arabs, and talks of evil spirits residing in the date tree.—*Burton's Mecca*, i. p. 227.

PILIBHEET, the chief town of the Jehanabad subdivision of the Bareilly district, has a population of 27,900 souls, inhabiting 6116 houses. It derives its name from a sect of Banjara called Peerea, and Bheet, a structure, or anything raised above the ground; the entire name implying the lodgment or tанда of Peerea Banjara. They first established themselves at a place now called 'Old Pilibheet,' and removed to the site of the present town about the year 1740, on the invitation of Hafiz Rahmat Khan, the then ruler of Bareilly, and in fact of all Rohilkhand. The town was subsequently fortified, and the old bastions and curtains of it are still standing, though dilapidated and broken. Pilibheet is the great emporium of Northern Bareilly and the adjacent Terai and hills, and its timber and rice marts are unequalled in all Rohilkhand. The far-famed Pilibheet rice is grown in the northern low Terai lands, and the finest and best quality sells at three seers per rupee, whilst the price of the coarser or inferior description varies from eight to eleven seers per rupee. Numbers of flat-bottomed boats are annually built at Pilibheet, and floated down to Futtchghur, where they ordinarily sell for about 200 or 250 rupees each.

PILLAI or **Pilly** is a title added to the names of persons in the south of the Peninsula engaged in agriculture. It is a Tamil term, and is usually supposed to mean a child or son of the deity; but some derive it from the god Pillaiyar, son of Siva. It is now a tribal title, which has been largely assumed by native Christians in the south of the Peninsula; it is also usually appropriated by the Idayar, the great pastoral race of the Tamil country, who, however, likewise take as titles, Konar, Kone, or Khone, meaning king. The title of Pillai is also conceded to the Kannahan or accountant's tribe, and the Valluwha priests of the Pariah races also call themselves Pillai, which is likewise allowed to the Hindu Komatti of Telingana. This honorary suffix is very largely taken in Travancore. Strictly speaking, it can be used there only by those who have presented to the sovereign a certain nuzzer, and have received the Tiru Mukha Shnanam. This titular appellation, though now assumed by many persons who have not been so honoured, but is by courtesy conceded to them, purports to indicate its recipient to be an honorary accountant to the sovereign, though its holder has no duties to perform.

PILLAIYAR, literally the noble child, the most common name of the god Vighneswara in the Tamil country. Pillaiyar chaturrtti, or Pillaiyar-nonbu, a fast on the fourth day of the new or full moon in honour of Vighneswara, and more especially in the month Avani (August—September).

PILLOW.

Oreiller, Coussin, . . . FR.	Talla-kani, TAM.
Kopfkissen, GER.	Talla-kada, TEL.
Gadi, Takiya, HIND.	Yuz-yassadighi, TURK.
Guanciale, IT.	

The only seats used by Asiatics of rank are carpets or cloths spread on the ground, which is elsewhere uncovered, and pillows. Moghul emperors used a sort of throne, but their courtiers sat on the ground. The Hindu rajahs, the Peshwa, and others, sat upon a cloth, supporting themselves by pillows. The Nawab of Hyderabad in the Dekhan, and all his nobles, sit on small carpets with pillows at their back.

PILOT FISH, *Naucrates ductor*, the *Gasterosteus ductor*, Linn. One of these almost invariably accompanies a single shark. It is a prettily-marked fish, the back and head being of a beautiful purplish hue, the sides streaked with fine black bands, the belly silvery, and the fins black and white mottled. Its length is from four to eight inches. It lives on marine plants (fuci) and fish. It is good and delicate eating. When a shark is caught, it does not quit it till the shark is removed from the water.

PILPAY, the Bed-pai of the ancient Hindu. He was the prime minister of Sailadeva. Pilpay's fables is the English version of the Panohatantra.

PI MA PEW. BURM. White peema, a tree of maximum girth 6 cubits, and maximum length 30 feet. Very abundant all over the Tenasserim and Martaban Provinces. When seasoned it floats in water. It is a tough wood, lighter than, but does not last for so long a time as, red peema, and rots in any position when shut out, as in the hulls of ships, in store, etc.—*Captain Dance*.

PIMELEA. A species of this genus of plants is abundant in the Wynad, and common all over the Neilgherries, where its fibre is made into sewing thread by the natives.

PIMENTA OFFICINALIS. Lindley. Clove pepper.

Eugenia pimenta, D. C., var. *a. longifolia*.

Myrtus pimenta, Linn., var. *a. longifolia*.

Piment, DAN., DUT., GER.	Pimenta du Jamaica, PORT.
Poivre de Jamaïque, FR.	Angliiskipiirets, RUS.
Nelken-pfeffer, GER.	Pimenta de la Jamaica, SP.
Pepe garofanato, IT.	Krydd peppar, SW.

This allspice tree, or bayberry tree, has been introduced into the East Indies. There are several large trees at Madras, but the climate of the Carnatic does not suit them. It flourishes spontaneously and in great abundance on the north side of the island of Jamaica. Every leaf when bruised emits a fine aromatic odour. The tree has been known to grow to the height of from 30 to 40 feet, exceedingly straight. A single tree has frequently produced 50 lbs. of the raw or 10 lbs. of the dried fruit, which is known in commerce as allspice, pimento, clove pepper, and Jamaica pepper. The fruit has an aromatic odour, and its taste combines that of cinnamon, nutmeg, and cloves; hence its common name of allspice. The leaves yield by distillation a delicate odiferous oil. The berries are gathered before they are ripe, and spread on a terrace, exposed to the sun for about a week, during which time they lose their green colour, and acquire that reddish-brown tint which renders them marketable. Some planters kiln-dry them. Perhaps a very plentiful crop occurs but once in five years.—*Poole*; *Simmonds*; *Cat. Mad. Ag. Hort. Gard.*; *Madras Exh. Report*; *Voigt*.

PIMPINELLA, a genus of plants of the natural order Apiaceae, of which are known *P. anisum*, *P. Candolleana*, *P. involucrata*, and *P. Lechenaultii*.

Pimpinella anisum, Linn., aniseed, anise.

Anisum, ARAB.	Rezian-i-rumi, PERS.
Mahoori, BENG.	Awak pushpi, SANS.
Tsa-moun tsa bah, BURM.	Karava sataphaspha,
Sonf, DUKH.	Sinhala-asamoda-
Anisum, GR. of Dioscorides.	gan, SINGH.
Anisa, GUJ.	Sombu, TAM.
Jira-manis, MALAY.	Kuppi chettu, TEL.
Adis manis,	

This plant grows in Egypt, Scio, and the

PINA-CLOTH.

Levant, and is cultivated in Europe for its seed, which in various forms is much employed in medicine as a stomachic, especially in the diseases of children, and is also used as a condiment among all eastern nations. 8 lbs. of the seeds give $3\frac{1}{2}$ ounces of the oil. Essential oil of aniseed is white, yellowish, a little lighter than water. It only exists in the pericarp, the interior of the seed yielding a tasteless and inodorous fixed oil. The pure essential oil can only be obtained by distilling the seeds with water. The oil is a good and safe stimulant, and is much used in prescriptions for children suffering from flatulence and colic.

Pimpinella crinita, Bois., Bal ajuain, SUTLEJ, RAVI. A small plant, common in the Salt Range up to about 2000 feet, and in several of the more arid tracts of the Panjab, Cis and Trans Indus.

Pimpinella involucrata, W. and A.

Apium involucratum, Roxb. | Radhuni, . . . BENG.
Pygeotis Roxb., D. C.

Cultivated all over Bengal, at Singapore, Prome, etc. Flower small, white, in February, March, and April. Seeds used by the natives for culinary and medicinal purposes. The leaves, though of an unpleasant smell, are now and then used as a substitute for parsley by Europeans.—O'Sh. Dr: J. L. Stewart; Voigt; Wight's *Icones*.

PINA-CLOTH, an expensive fabric made by the natives of the Philippines from the fibres of the pine-apple leaf, the *Ananassa sativa*; the texture is very delicate, soft, and transparent, and generally has a very slight tinge of pale yellow. It is made into shawls, scarfs, handkerchiefs, dresses, etc., and is most beautifully embroidered by the needle. See Pine-Apple.

PINANG, also Pulo-Pinang, or Prince of Wales Island, is about 400 miles to the north of Malacca, at the head of the Straits, and separated from the mainland by a channel two miles broad. The highest peak, not far west of the town, is about 2700 feet high. Government Hill adjoining it is about 2500 feet, and the other hills from 1000 to 2000 feet high. The island is 14 miles long by 8 miles broad; it was obtained for a yearly payment of 6000 dollars from the neighbouring Malay sultan of Kedah, through the influence of Captain Light, who is said to have married his daughter, and who was appointed the first governor in 1786. The island then was wild and uncultivated, with only some 20 or 30 inhabitants. Long after that, the opposite coast, some 30 miles long by 15 miles broad, was obtained from the same prince for another annual payment of 4000 dollars.

PINA-THA. BURM.? In Amherst, Tavoy, and Mergui, a tree of maximum girth 5 cubits, and maximum length 25 feet. Very abundant all over the Tenasserim provinces, particularly in the old deserted towns. When seasoned, it floats in water. It has a light wood with a yellow hue, which darkens on exposure. Useful for the yellow dye which boiling extracts from it, and which is permanent in cloth, and not affected even by boiling water. It is used by Phoungyes. This wood has a fine tone when struck, and is used for musical instruments by the Burmese; it is used by English brush-makers for the backs of hair brushes, being a handsome wood which takes a good polish.—Captain Dance.

PINDA.

PINCHBECK.

Tombak, DUT. Wellaety-suna, GUY., HIND.
Similor, Tambac, . . . FR. Tombacoco, IZ.
Tomback, GER. Tambao, Tumbaga, . . . SP.

A yellow, gold-coloured alloy of zinc, copper, and brass, in imitation of gold.—*M' Culloch*.

PIND. HIND. An aphorism. In the Upper Panjab, a village; as Pind Bhattian, Pindi Ghaib, Rawal Pindi. In the Multan division and Dehrajat, dried dates of *Phoenix dactylifera*.

PINDA. SANSK. A ball of food offered at the Srad'has of Hindus to the pitri or manes. They are made of boiled rice, sesamum seeds, honey, butter; also, at times, various pulses, cereal grains, water, frankincense, sugar, and milk. Also said to mean food prepared the day after a death, of which, as a rule, only members of the family partake.

It is laid down in the Hindu scriptures that, on the occurrence of a death, the son or other heir of the deceased must offer lump-offerings (pinda), and that if he neglect to do so, the spirit passes into the state of goblin. If, after the fourth lump has been offered, the obsequies proceed no further,—for example, if any cause occur to prevent cremation,—the spirit, it is believed, remains a bhut or goblin. Similarly, if six lumps only be offered, the spirit remains a pret. For twelve days the soul, it is supposed, is seated on the eaves of the house in which it had parted from the human body. At sunset, therefore, the compassionate relatives place upon the roof for its subsistence a vessel of water and another of milk. Other accounts fix the residence of the soul during this melancholy period at the place of the funeral pile, or at cross roads; and some admit that it dwells alternately in the elements of fire, air, and water, and in the house which was its home. One lump-offering should be made daily, until the fourth day from the day of decease, for the construction of a new body for the pret. The body at the end of that time attains to the size of the upper joint of a man's thumb. On the tenth day, a lump should be offered for the purpose of satisfying the hunger and thirst which the pret now begins to feel. The common practice in Gujerat at the present time is to make the lump-offering ten times on the tenth day. Srad'ha must be performed on the tenth, eleventh, twelfth, or thirteenth day succeeding the decease, and afterwards monthly on the day of the month on which the death occurred, and yearly on its anniversary. Srad'ha must be performed beside a reservoir or on the banks of a river. The sacrificer shaves his face, and, holding in his hand a copper cup containing water, with sesamum and sacrificial grass, he repeats the name of his progenitors, both paternal and maternal, sprinkling water as he repeats each name. The heir now forms an image of the deceased with sacrificial grass, washes it, and strews it with flowers. A similar representation of a Viswa Deo is also made to witness the performance of the rite. The sacrificer sprinkles these, muttering a charm which has been taught him by his family priest, and which is supposed to call the Deo and the soul of the deceased into the figures. A saligrami stone is placed beside them to represent Vishnu, and the three are worshipped with the usual ceremonies. Food is then set before the grass figures and the saligrami, and

the heir, sprinkling them once more, repeats the charm which is supposed to dismiss their inhabitants. The grass is thrown before a cow to be eaten. The rites performed, the relations and neighbours of the deceased are entertained, and Brahmans feasted according to the means of the sacrificer.—*Kennedy on the Origin of Languages*, p. 210; *Rasamala, Hindoo Annals*, ii. p. 374.

PINDAPATA VELA is explained to signify the hour of going round to collect the Pinda, which is the name given to the food collected by the Sangata or Buddha mendicant. The word means a lump or ball of any viands, usually of rice or meal. It is at the seventh gharrhi, which will be one hour after noon.—*Hind. Th.* ii. p. 38.

PINDARA or Pindari, who ravaged India from the middle of the 18th to the earlier part of the 19th century, were of every origin, but the term was taken from the Beder race, who extend from the Kistna southwards into the Mysore country, where they hold lands. A small body of them dwell on the platform of Ramian Malay, 37 miles west of Bellary, and there are two small principalities of the Beder race at Zorapore and Ghurgunta, on the north bank of the river Kistna. It is from this race, the Baidara Wanlu of the Teling, that the name Pindara comes.

Pindara are mentioned in Indian history as early as the commencement of the 18th century; several bands followed the Mahratta armies in their early wars in Hindustan. Coleman tells us that they were early arranged into durrah or tribes, commanded by sirdars or chiefs, and people of every country and of every religion were indiscriminately enrolled in this heterogeneous community, a horse and sword being deemed sufficient qualifications for admission. A common interest kept them united. Some of the chiefs acquired wealth and renown in the Mahratta wars; they seized upon lands, which they were afterwards tacitly permitted to retain, and transmitted, with their estates, the services of their adherents to their descendants. The Pindara were a sort of roving cavalry, coeval with the earliest invasions of Hindustan by the Mahrattas. When the Brahman Peshwa rulers ceased to interfere personally in northern politics, and that part of the Mahratta affairs became transferred to Sindia and Holkar, the Pindaras ranged into two parties, the Sindia Shahi and Holkar Shahi. The horde was called a Lubbur, and out of 1000 about 400 might be well mounted. Their favourite weapon was a spear with a light bamboo shaft, and from 12 to 18 feet long. They had no baggage, and could therefore move with a speed which no regular troops could accomplish. They were guilty of every outrage that barbarity could suggest on the villages through which they passed. The Pindara attached themselves as a distinct class to native armies, which they followed without receiving pay or being actuated by patriotism; and so far from wishing to be distinguished for their prowess as fighting men, they never sought even for plunder, their sole occupation, but where it could be obtained without danger.

When first known to the British, they were in two bodies, the Sindia Shahi, of 18,000 horse and 1300 foot, with 15 guns, and the Holkar Shahi, of 3000 horse, 1500 foot, and 18 guns. The Sindia Shahi were under several leaders, of

whom Chetoo, Karim Khan, and Dost Muhammad were the principal. They moved through the country at their pleasure, and levied contributions at will upon their sovereign's subjects and dependents, or carried their bands into Rajputana, and plundered both friends and foes. They threatened Mirzapore, plundered Masulipatam, Ganjam, Guntur, and the Northern Circars. Central India was disorganized, the princes of Rajputana were helpless, the Maharaja of Udaipur was bearded in his capital by military adventurers, and robbed of his domains by his own feudatory chiefs and clansmen. His palace on the banks of the lake was besieged, and his servants bringing up water were plundered; and on the suppression of the Pindara, the British Government, in 1818, allowed him Rs. 4000 a month until his country should yield some revenue. Rajputana had then become wholly disorganized. The raja of Jodhpur had abandoned the reins of government to the hands of a dissolute prince, who was soon after assassinated. The raja of Jeypore, infatuated by a Muhammadan dancing girl, preserved only a portion of his hereditary possessions by the sufferance of Amir Khan. The Marquis of Hastings, then Governor-General, took the field against them in 1817, with the combined forces of the Bengal, Madras, and Bombay armies, which, including irregular horse and contingents, amounted to 116,464 men and 295 guns. It was the strongest British army which had been seen in India. One-half operated from the north, the other half from the south. The forces of the native powers which might be brought into the field were estimated at 130,016 horse, 87,316 infantry, and 589 guns, including the Pindara.

During the administration of Lord Hastings, the most powerful of the captains were Amir Khan, Chetoo, and Karim Khan. Amir Khan had an organized army of many regiments and several batteries of cannon. In 1814 he had 30,000 horse and foot, and a strong force of artillery, whom he supported by exactions on the Rajput states. Karim, in 1807? paid a ransom to Sindia of £100,000.

Chetoo during 1817 had been encamped at Ashta, on the Parbati river, some 40 miles distant from Bhopal; a second camp of Pindara was under Karim Khan, north of the town of Ashta, near Baisa; and a third, under Wasil Muhammad, near Garspur, 35 miles west of Saugor. But between Chetoo and Karim Khan the enmity was such as to preclude the formation of any common plan of action. They were hemmed in by divisions of the army of India under Sir Dusen Marshall, Sir John Malcolm, Sir Thomas Hislop, Colonel Adams, and the Marquis of Hastings, and one part after another was surprised and broken up. Amir Khan disbanded his army on condition of being guaranteed the possession of what is now the principality of Tonk. Karim Khan was granted a jaghir, value Rs. 1,60,000 per annum, near Gorakhpur, on the Nepal frontier. Wasil Muhammad was placed at Ghazipur, on the Ganges, but, disgusted with so tame a life, he poisoned himself; and Chetoo, refusing all offers, about February 1818 fled to the forest, and was destroyed by a tiger in the jungle near Asirgarh. He was the last of the Pindara chiefs in the field.

In the same year (1817), and almost in the

same month (November), as that in which the Pindaras were crushed, the three great Mahratta powers at Poona, Nagpur, and Indore rose separately against the British. The Peshwa himself surrendered, and was permitted to reside at Bithur, near Cawnpur, on a pension of eight lakhs of rupees. The districts in Central India and Malwa were left in a disorganized state: the Mahratta chiefs had parcelled out amongst themselves the possessions of the Rajput chiefs, and the smaller states were all subject to Sindia, Holkar, or the Puar, and sometimes to all three. Many of the smaller chiefs had been driven from their possessions, and had sought refuge in the jungles and mountains, where they robbed or levied tankhah or black-mail from the larger states. These predatory chiefs were twenty-four in number at Sir J. Malcolm's time.

The capture of Atghar on the 8th April 1819, was the closing operation of the war against the Pindara and the Mahrattas, under Appa Sahib, Baji Rao, and Holkar. It had lasted from the 5th November 1817 to the 13th May 1819, during which the British forces had conducted a remarkable number of sieges, and forced marches by night and day. More than thirty hill fortresses had been captured, and a space of nearly 40 geographical degrees, which for half a century had been scenes of continued anarchy, was freed from the most destructive of military insolence, of a vast number of well-armed, reckless, and predatory hordes. No grand battle was fought, and much was effected by political sagacity. Holkar's power and territories were reduced, Appa Sahib became a fugitive, Baji Rao a pensioner, and Sindia's power reduced; while treaties were entered into between the E. I. Company and the rajahs of Jodhpur, Jeypore, Jeysulmir, Bikanir, Dungarpur, Partabghur, Banswara, Sirohi, Krishnagur, Kisauli, Bundi, and Kotah. 134 European officers and 3042 of other ranks had been killed and wounded.

PINDARAKA, a watering-place on the Gujerat coast, about 20 miles from the N.W. corner of the Peninsula of India. It is near Dwaraka, and was resorted to by Krishna. It is still venerated.

PIND DADAN KHAN, a commercial town in the Panjab, with a population of 15,740, consisting of 7329 Hindus, 7984 Muhammadans, 404 Sikhs, and 23 others. It is situated in lat. 32° 34' 53" N., and long. 73° 5' 20" E., and is one mile from the north bank of the Jhelum river, and five miles from the foot of the Salt Range.—*Imp. Gaz.*

PINDING. SINGH. A gold ornament worn by Malay women of rank as a fastening for the waist-belt.

PINDUR and Kuphinee, two rivers in the Kamaon Himalaya, remarkable for the glaciers which occur in them.

PINE-APPLE, *Ananassa sativa* or *Bromelia ananas*.

Nanat, Nannah-thi, BURM.	Pina, . . . of PHILIPPINES.
Pandang, . . . CELEBES.	Nay, SGAU.
Pijn appel, . . . DUT., RUS.	Separat, SIAM.
Ananaso, IT.	Anasi, SINGH.
Nanas, MALAY.	Anasia, TAM.
Koida chika, . . . MALEAL.	Ananas, TEL.

This is the fruit of a plant indigenous to America and the East and West Indies, and reared in hot-houses in Europe. In its wild state it is inferior to the carefully cultivated.

It is one of the most abundant fruits in the Tensas-erim provinces. Its long and rigid leaves, thorny at the edges and point, abound in fine white fibres, which are in some countries woven into the finest fabrics, netted or twisted into lines for fishing, and into ropes possessed of considerable strength. These are said not to be injured by constant immersion in water, a property which the natives increase by tanning them. The plant is said to have been introduced into India by the Portuguese in the year 1594. Being a native of the moist forests of South America, from the level of the sea to elevations of about 1800 feet, it requires, for its successful culture as a fruit, a warm and moist climate; but, like others of the family, the species are capable of existing in a warm, dry air. The pine-apple is described as growing in great abundance in the Philippine Islands, but as producing only a small, rather dry fruit. But M. Perrotet considered it a distinct species, and named it *Bromelia pigna*, from the Spanish name *Pigna* or *Pina*, signifying a cone. There, this plant is valued on account of the fine hair-like fibres which are separated from out of the leaves. Of these fibres, the celebrated pine-apple cloth of the Philippines, sometimes called 'batiste d'ananas,' and resembling the finest muslin-like fabric, is woven. This is embroidered by the nuns of the convents in Manila. The leaves, recently gathered, are laid upon a board, and the epidermis is removed with a broad knife. Upon its removal from the upper surface of the leaf, the long and beautiful fibres are seen lying upon the lower and denser epidermis, running in a longitudinal direction; the fasciculi of fibres are then readily detached by the hand, on being raised with the broad knife. Spinners in England did not consider it could be substituted for flax in the manufacture of textile fabrics. A patent was, however, taken out by Mr. Zincke, for the manufacture of thread from this fibre, because, when bleached, it could be spun in the same way as flax. The process of bleaching, by destroying the adhesion between the bundles of fibres, renders it much finer, and hence enables it to be extended between the rolls in the process of spinning. The first step is to remove the fleshy or succulent side of the leaf. A Chinese, astride on a narrow stool, extends on it, in front of him, a pine-apple leaf, one end of which is kept firm, then, with a kind of two-handled plane made of bamboo, he removes the succulent matter. Another man receives the leaves as they are planed, and with his thumb-nail loosens and gathers the fibres about the middle of the leaf, which enables him by one effort to detach the whole of them from the outer skin. The fibres are next steeped in water for some time, after which they are washed, in order to free them from the matter that still adheres and binds them together. They are now laid out to dry and bleach on rude frames of split bamboo. The process of steeping, washing, and exposing to the sun is repeated for some days until the fibres are considered to be properly bleached. Almost all the islands near Singapore are more or less planted with pine-apples. The leaves that are annually suffered to rot on the ground would supply fibre for a large manufactory of valuable pina-cloth. The pine-apple planters are not Malays, but Bugis, most of whom have families.—*Jour.*

Ind. Archip. ii. No. viii. 1848, p. 523; *M'Clelland*; *Mason*; *Royle's Fib. Pl.* p. 337; *Journ. of Agric. Soc. of India*, viii. p. 182. See *Pina-Cloth*.

PINELLIA TUBERIFERA. Midsummer root. Sang-pwan-hia, . . CHIN. | Fan-pwan-hia, . . CHIN.

In China, the tubers of two or three aroid plants are gathered in the middle of summer, and used medicinally. Of these, *Pinellia tuberifera*, *Arisaema ternatum*, *Arum macrorum*, and others are soaked and dried frequently, until the poison is exhausted, and then cut into slices or made into a powder. In Hankow, they are met with in the form of white or yellowish-white spherical balls, the interior is beautifully white, dense, and amylaceous when fresh; they are emetic and diaphoretic. When dried or in powder, they are given in fever, rheumatism, apoplexy, and renal diseases.—*Smith's Mat. Med.* p. 149.

PINE MARTEN, *Martes abietum*, does not apparently affect the Western Himalaya, but its skins are brought to India from Afghanistan.

PINEY TREE, *Vateria Indica*, *L.*, the *Elæocarpus copalliferus*, *Retz.*, is a lofty tree of Malabar, which produces the piney varnish, the piney resin or white dammer, Indian copal or gum anime, and the piney tallow or Dupada oil, and the timber is an excellent building wood. The tree grows plentifully in the forests of the western coast; it grows from cuttings, and is found planted by the roadside in Malabar. The resin resembles copal, and the finer specimens are as transparent as amber, and nearly colourless. It is procured by cutting a notch in the tree, sloping inwards and downwards. This is soon filled with the juice, which in a short time hardens by exposure to the air. When used as a varnish, the usual practice is to apply the balsam before it has become hard.

Dr. Buchanan, in his *Journey through Mysore, Canara, and Malabar* (ii. p. 476), says men of the Panchala tribe paint and varnish by the following process:—They take buttermilk and boil it with a small quantity of quicklime until strings form in the decoction and separate from the watery parts, which they decant. The stringy matter is then mixed with the paint, which has been well powdered; with these the woodwork is first painted, it is then allowed to dry for one day, and afterwards receives a coat of pumdani, which is the fresh juice of a tree called *Piney marum*. The pumdani must be used while it is fresh, and will not keep for more than two or three days after the first coat of paint is given, and that is followed by another of varnish. In the same manner leather may be painted and varnished. The varnish effectually resists the action of water, but when that is not procurable, the resin, melted by a slow heat, and mixed with boiling linseed oil, forms a varnish which answers equally well for most purposes. The following formula for its preparation may prove useful:—Into a new and perfectly clean earthen vessel (a chatty) put one part of the piney dammer in coarse powder, cover closely, and apply a very gentle heat until the whole is melted; then add about two parts of linseed oil, nearly boiling hot, and mix well with a wooden spatula. Should the varnish prove too thick, it can at any time be reduced by the addition of more oil, or, if required, may be made thicker in the first instance. It is essential to the success of the process that the piney be

melted in a covered vessel over a very slow fire, and the whole of it reduced to a fluid before the addition of the oil, which must, to ensure an equal mixture, be nearly boiling hot. This varnish is used for carriages and other fine furniture requiring to have their paint well protected, or to which it is desirable to impart a fine gloss. A spirit varnish is prepared by reducing to powder about six parts of piney and one of camphor, and then adding hot alcohol sufficient to dissolve the mixed powder. Alcohol does not dissolve piney without the aid of the camphor, but once dissolved will retain it in solution. The varnish thus prepared is employed for varnishing pictures, etc., but before being used requires to be gently heated to evaporate the camphor, which otherwise will produce, by its after-evaporation, a roughness and inequality on the surface of the picture, and spoil its appearance.

Piney tallow or Dupada oil, Piney yenne, TAM., Dupada nuna, TEL., remains perfectly solid, even in hot climates. It is prepared by cleaning the seeds, then roasting and grinding them into a mass. To five seers of seed add 12 seers of water, and boil until the oil rises to the surface. Remove the oil, stir the contents of the vessel, and allow it to stand until the following day, when more oil will be observed on the surface, which may be collected, and the process repeated. The oil is principally used for lamps, but is very suitable for soaps and candle-making.

On the Malabar coast, the resin, under the name of piney dammer, is made into candles, which diffuse in burning an agreeable fragrance, give a clear, bright light with little smoke, and consume the wick so as not to require snuffing. Some of these candles that were sent to Great Britain were highly prized, and sold for very high prices. Their importation was stopped by the high duties that were levied on them.—*M. E. J. R.*; *O'Sh.* p. 755; *Wight*; *Buchanan's Journey*.

PINGADO and *Bambwai*, timbers of Burma, possess the same property as anan in resisting decay, but are less abundant, denser in grain, abound in knots, and are smaller in size than that timber; they are, however, prized by the Burmese for their useful properties, and are with thegan generally used in the whole tree as posts for monasteries, houses, etc. In the construction of wharfs and embankments on the river face, both anan and pingado would be found valuable for posts, and if proper care be observed in the selection of the timber and in freeing it from all the sap portions of the tree, it would doubtless prove as lasting as brickwork.

PINGALA, a great authority on the *Ch'handas* or prosody of the Vedas. He is supposed to have written about two centuries B.C.—*Douson*.

PINGO, SINGH., the cowri or cavadi of the Peninsula, is an elastic stick loaded at both ends, poised on the shoulder, used in Ceylon for carrying burdens.—*Simmonds*.

PINI, in the Society Islands, coarse matting made of rushes.

PINJAN. HIND. A large bow, used in carding and cleaning cotton.

PINJARA. HIND. A cotton-cleaner. He uses in his trade the following apparatus:—*Tatti*, 2 annas; *dastab*, 8; *kunar*, 40; *goolal*, $\frac{1}{4}$ anna; *tarazoo*, 1—total, Rs. 3.3.3. A Pinjara can clean 72 lbs. of cotton in a day, and earn about

eight annas daily. Cotton, after being separated from the seed, is beaten to open out the fibre and fit it for spinning.

The Rahat of Dharwar is the cotton spinning-wheel.

The Tanwul is the rack on which the thread is wound to form into hanks for sale.

The Foot-roller of Dharwar, for cleaning cotton, is worked with two feet on a stone by a woman sitting, or rather balancing herself on a low stool. The seeds are rolled out in front, and the cotton drawn away as fast as it is freed from the seed, and piled up behind under the stool.

The Ratee or roller of Dharwar is sometimes used for separating the seed from the cotton.

PINJRAPOL. HIND. In India, an hospital for sick animals. The account given by Pietro de la Valle, who visited India 1614-1623, shows how very ancient this asylum is. 'The same day of our arrival,' says he, 'after we had dined and rested a while, we caused ourselves to be conducted to see a famous hospital of birds of all sorts. The next morning we saw another hospital of goats, kids, sheep, and wethers, either sick or lame.' The Jains are the great protectors of animal life. They, together with the Buddhists, are pre-eminently tender on this point, not only on the score of humanity, but from their belief in the doctrine of metempsychosis, which teaches them to regard the brutes as of their own kin, the tenements not improbably of the souls of their ancestors. The celebrated king Asoka flourished about 250 years B.C. His capital was Palibothra, at the junction of the Sone and Ganges. The inscriptions on the palaces of Dehli and Allahabad, on the rocks in Afghanistan and Girnar in Cutch, refer to the events of his reign. On one of these tablets, Asoka proclaims that though until then hundreds of thousands of animals had been killed daily for the royal kitchen, from thenceforth the practice should be discontinued, as he had become religious. On another, it is proclaimed that throughout his dominions, trees for the shade and shelter of men and animals, and wholesome and nutritious vegetables for their consumption, shall be cultivated. It is considered probable that the Jains and Buddhists set their faces against animal suffering, as a contrast to the cruelties at the time practised by the Brahmans, and that they to some extent succeeded in shaming them down. It appears from the Ramayana that the Brahmans of those days made offerings not only of flowers and plants, but of slaughtered horses, hogs, and sheep; the sacred cow herself being occasionally offered on the altar. At their feasts both butcher meat and intoxicating liquors were freely indulged in. The Brahman hermit, Bharadwaja, gave a magnificent entertainment at Allahabad to Charat and his army, where venison, the flesh of the wild boar, mutton, peacocks, and partridges, with abundance of strong drink, furnished forth the repast. Menu considers the feast in honour of a dead relation incomplete unless where animal food is present. We have no authoritative information as to when the present protective system crept in; that it is not countenanced by the sacred books of the Hindus or the customs of antiquity, and is a matter comparatively of yesterday, is apparent. We are still more in the dark as to the introduction of hospitals for aged and diseased animals. Of one of these at

Surat, Orington gives an account as he saw it in 1689, Hamilton describes it as he saw it in 1772, Heber speaks of that at Broach in 1824. There is nothing that can be adduced in their support either from the sacred works of the Hindus, the Asoka inscriptions, or the institutes of Menu, more than may be inferred from the proverb of Solomon that 'the merciful man is merciful to his own beast.' The homage to brute animals, originally confined to the Jains and Buddhists, and not even making its appearance amongst them until a comparatively recent period of their history, slowly extended itself amongst the Brahmans, and in the early part of the 19th century had infected the Parsees. This comparatively enterprising and enlightened race, so far from being exempt from the degrading superstitions of the Hindus, as has been asserted, seem to have picked up some rags from the superstition of every sect and denomination with which they have come in contact, and patched it on to their own comparatively simple creed. The superstition of the Banians, like themselves a great trading community, seems to have been peculiarly attractive to them, and the pinjrapol being their pet institution, speedily secured the sympathies of the Zoroastrians.

The Bombay pinjrapol owed its origin as much to the Parsee respect for dogs as to the superstitions of the Jains. In 1813, the dogs running wild and masterless in the street had become so intolerable a nuisance, that an order was issued for killing them, and the result of this was a succession of street rows and disturbances betwixt the dog-destroyers and dog-reverencers, which led the latter to offer a sum of money for each mangy cur that was released from durance and made over to them. Some 30,000 or 40,000 of these canine quadrupeds were in this way annually packed off, the bulk of them were sent to an island near the mouth of the Tapti to starve or to worry or infect each other. So cruel are the tender mercies of the wicked and superstitious. Great expense was incurred on this account, and as the funds began to diminish from failing zeal, Motichund Amerchund, a great Jain merchant, and partner of Sir Jamsetjee Jejeeboy, exerted himself and obtained an agreement on the 18th October 1834 from Shree Gosainjee Maharaja, and sets of the Hindus, Parsees, and others, by which they bound themselves to raise taxes on opium, cotton, sugar, bills of exchange, and pearls, 'that the lives of a great many animals may be saved, which is an act of great charity.' The Srawaks or Jains agreed to raise a fund amongst themselves for the required ground and building, the rates were collected and sent yearly to the managers appointed, namely, Bomanjee Hormusjee Wadijee, Sir Jamsetjee Jejeeboy, Motichund Amerchund, Vukutchund Khooshalchund. The agreement, signed by about 450 merchants, contains a clause stating that any excess of the funds may be applied to such charitable objects as may be approved of by the trustees. At one time there were about seven lakhs of rupees (£70,000). Whilst the Bombay pinjrapol was under the vigilant superintendence of Sir Jamsetjee Jejeeboy, the funds poured amply in, and the institution was most carefully conducted. Since 1851 the place has become a sink of animal and moral corruption. When seen by the Editor in 1866, it was filled

with wretched sick animals, and the place was inexpressibly filthy. It fearfully fails to fulfil any one of the ends it professes to aspire after. To the horse, the ox, the goat, the sheep, and the dog, more especially the first and the last, fresh air and exercise are indispensable, not only to health and enjoyment, but to existence. As to the horse, he is a hunter of the hills; to him confinement is a curse, and followed by the worst of ills. This noble beast—who probably has never once within his life been tied up for forty-eight hours on end, whose master, daily even and morn, when there was no work for him to do, saw that he had air and exercise—from the day that he enters the pinjrapol to that when his dead carcase is dragged out of it, is pinned down to one spot. The sheep and goats fare but little better; the dogs are infinitely worse off than the horses. It not unfrequently happens that animals which have been sent there by mistake are recovered by their owners; a single hour in the kennels sends them back covered with vermin, and infected with the most loathsome diseases. Lions, tigers, panthers, and other carnivora are occasionally kept in the pinjrapol; it is forgotten that for every day that one of these is kept alive, one sheep or goat must die to feed it.—*Bombay Standard*, 1858; *Bombay Times*.

PIN-LAY-JALLAT. BURM. A tree of maximum girth $2\frac{1}{2}$ to 3 cubits, and maximum length 15 feet, in the Tenasserim provinces. When seasoned, it floats in water. Its wood is strongly recommended for fuses; it is free from oil and acid, and light, yet strong; it is much used for rockets of enormous dimensions and for wooden guns, and is used for the burning of the dead Phoungyes, and on other occasions.—*Capt. Dance*.

PINNA, a genus of molluscs. The byssus of a Mediterranean species is long enough to be woven into a fabric. Men's gloves, from its byssus, in 1820 cost 13 carlini the pair; women's gloves, 18 carlini; stockings, 6 ducats; waistcoats, 30 ducats; and coat, 100 ducats.—*Jameson*, p. 191, i. 1820.

PINNACE, a boat of the Ganges, rigged like a brigantine, and used for family pleasure-trips or short journeys, rather than for any lengthy travel; generally from 12 to 20 tons burden, and from 40 to 50 feet in length, with a crew of 12 or 15 men.

PINNOTHERIDÆ, a family of the Brachyurous crustacea called Pinnotherans by Milne-Edwards, known by the common name of pen-crabs; of these the genus *Elamena*, *M.-Edwards*, is founded on *Hymenosoma mathæi*, figured by M. Ruppell in his work on the Crustacea of the Red Sea. Milne-Edwards thinks that it seems to establish the passage between the *Hymenosomata*, the *Oxystomes*, and the *Oxyrhynchii*. *Elamena mathæi* (Ruppell, Krabben, pl. v. f. 1) is found in the island of Mauritius and the Red Sea.—*Eng. Cyc.*

PINS.

Epingles,	FR.	Pinit,	MALAY.
Stecknadeln, . . .	GER.	Gundu vusi, . . .	TAM.
Tankni,	GUJ.	Gundu sudi, . . .	TEL.
Alfin,	HIND.	Toplu,	TURK.
Spilla,	IT.		

These are imported into India from Europe.

PINTO. Ferdinand Mendez Pinto, a Portuguese leader in the Eastern Seas from 1537 to 1558. He wrote a history of his career, under the title

'Peregrinations,' which were published in 1614, and translated and published in 1653 by H. C. Gent. These afford a fearful picture of the inhuman depravity and bloodthirstiness of the Portuguese adventurers of his time. Faria-y-Sousa, author of 'The Portuguese Asia,' regards Pinto as a truthful writer; but Pinto has been treated as an infamous liar, simply on account of the incredible atrocities which he describes without any reticence or apparent consciousness of their guilt. He was the first European who visited Japan. He landed at Cape Bungo towards the end of 1542, in lat. $33^{\circ} 32' N.$, and long. $132^{\circ} 2' E.$ He was either shipwrecked there or landed intentionally. He returned to Europe 1558, and died 1581.

PINUS, a genus of trees belonging to the natural order Pinacæ of Lindley, the Coniferæ of Jussieu, the fir tribe of plants. Cone-bearing pines with long leaves, like the common Scotch fir, are found as far south as the equator, in Arakan, the Malay Peninsula, Sumatra, Borneo, Japan, and S. China, also in Arabia, in Australia, and New Zealand. It is a very remarkable fact that no gymnospermous tree inhabits the Peninsula of India, not even the genus *Podocarpus*, which includes most of the tropical gymnosperms, and is technically coniferous, and has glandular woody fibre, though, like the yew, it bears berries. The absence of oaks and of the above genera (*Podocarpus* and *Pinus*) is one of the most characteristic differences between the botany of the east and west shores of the Bay of Bengal. The pine tree genus consists for the most part of timber trees, many of which are of great beauty, and of much value on account of their timber. Many of them are growing along with fir trees (*Abies*), yew trees, and the larch (*Larix*), in the Northern Himalaya, in China and Japan, and one or two in Burma, one? in Cochinchina, and one in Arabia. Other eastern coniferæ are species of *araucaria*, *biota*, *callitris*, *cedrus*, *Cunninghamia*, *cupressus*, *cryptomeria*, *dacrydium*, *dammara*, *juniperus*, *larix*, *podocarpus*, *taxodium*, *taxus*, and *thuja*. The pine forests of the hills yield tar, resin, and might yield turpentine, except that, by the native process of preparation, this most valuable product of the crude resin is allowed to evaporate. The pines of New Zealand are the *Dammara Australis*, *Dacrydium cupressinum*, *Podocarpus totara*, *P. dacrydioides*, *P. spicata*, *P. ferruginea*, and *Phyllocladus trichomanoides*. The San or Sha-mau pine tree of the Chinese is the *Cunninghamia Sinensis*, a tree of Japan and of the South, Central, and W. Provinces of China, at a distance from the sea-coast. All parts of the tree are used medicinally, as stimulant, tonic, and sedative remedies; it yields a good timber, used for coffins, flooring, furniture, house-frames, and for piles, but these latter must not be alternately exposed to the air and water. Several of the Indian coniferæ have been variously arranged by different botanists, under the genera *Abies*, *Cedrus*, and *Pinus*, but the following are usually recognised as belonging to the last-named genus:—*Pinus alcockiana*, *Parlatore*, grows in Japan, at 6000 to 7000 feet.—*Von Mueller*.

Pinus densiflora, *Sieb. and Zucc.*, a tree of Japan, along with *P. Massoniana*.

Pinus excelsa, *Wall.*, the *P. peuce* of Macedonia. Its eastern synonyms are—

PINUS.

Kail, . . . BEAS, SUTLEJ.	Biar, . . . JHELUM.
Lam-shin, . . . BHOT.	Kaiar, Yero, Yari, KASH.
Tongschi, . . . BHUT.	Tser, . . .
Chir; Kachir, . . CHENAB.	Raisalla, . . . KHAS.
Darchir, . . . "	Sam; Palsam, . . . PITI.
Keuri, . . . "	Chil, . . . RAVI.
Shim; Som-shing, . . "	

It is a large tree of Narambetty, Nepal, Simla, Bhutan, Sirmur, Garhwal, and Kaghan; scarce at Murree. Found in the Sutlej valley between Rampur and Sungnam, at an elevation of 7000 to 11,000 feet; at places rises to 12,000 feet. It grows in W. Nepal, not in E. Nepal, and Sikkim, but is common in Bhutan. It is found with the deodar at Narambetty, Theog. Resembles the Weymouth pine, and is remarkable for its drooping branches. Dr. J. L. Stewart says it has recently been identified with *P. peuce*, which grows only in a confined locality in Macedonia at from 2400 to 5800 feet. It is common in many parts of the Panjab Himalaya, generally growing in mixed forests, from 5000 to perhaps 11,000 feet; the 13,000 feet given as a maximum by Aitchison is probably a mistake. It also grows sparingly in W. Tibet, at 8000 to 10,000 feet; Trans-Indus. Griffith found it in Kafiristan, and Bellew near the Safed Koh, at 9000 to 10,000 feet. Trees of 8 and 9 feet girth are not unfrequent, but it rarely reaches 100 feet in height, although trees of 150 feet occur at times. It furnishes the best wood for most purposes of all the Himalaya conifers next to deodar, and where the latter is scarce or dear, this is used for all the ordinary purposes of construction. In Kullu, as shingles, it is said to last 7 or 8, and inside 15 years; and at Murree, where it is the best wood procurable for shingles and ordinary purposes, the supply in A.D. 1860 was rapidly getting exhausted. The wood is so resinous as to be used for flambeaux and candles.

Pinus firma, *Antoine*, of N. Japan.

Pinus Portunei, *Parlatore*, of China.

Pinus Gerardiana, *Wall.*, Neoza pine, edible pine.

Chilgoza, . . . AFGHAN.	Neoza, . . . HIND.
Chiri, Prita, . . CHENAB.	Ri, . . . KANAWAR.
Miri, Galboja, . . "	Miri, Galgojal, . . . PAKI.
Gunohur, . . . HIND.	Julgozali, . . . PUSHTU.
Rhee, Newz, . . . "	Kashiti, . . . RAVI.

A moderate-sized tree, confined to the northern and drier face of the Himalaya, beyond the range of periodical rains far among the hills, and its presence is indicative of a dry climate. It grows in one or two small clusters on a ridge with a northern exposure, near Walassa, but does not generally ripen its fruits. It is first seen on the Miru ridge, and above Chini becomes a principal tree of the forest, produces a very large cone, containing, like the stone-pine of Europe, eatable nuts, of an elongated oblong form, which, when roasted like chesnuts, are agreeable to the taste, though with a little flavour of turpentine. The seeds, of which there are more than a hundred in a cone, are collected and stored for winter use, being a regular article of food in Tibet and Afghanistan. They ripen about October, and are extracted from the opened cones by beating. They are largely consumed by the inhabitants, which has probably caused the wood of the tree to be less used than it would otherwise have been. They are oily and difficult of digestion, are stimulant, and an oil extracted from them is said to be applied externally in diseases of the head. This

PINUS

tree has been repeatedly tried in the rainy districts of the Himalaya, but will not succeed, a dry climate being essential to it. It is common in a part of the Upper Sutlej basin, at one spot on the Ravi, on a short portion of the Upper Chenab and its tributary the Miru, also growing near Astor and Gilgit, not far from the Indus, and is found near the Safed Koh (Bellevue), and in Kafiristan, etc., north of the Kābul (Griffith). Its range in the Panjab Himalaya may be put at from 5800 to 8000 feet. Dr. Stewart believes there is some mistake in Cleg-horn's 10,500 feet on the Sutlej. It does not, as a rule, exceed 6 or 7 feet in girth, although he had seen it up to 12 feet, and its height does not generally range over 50 or 60 feet. It is a short-trunked tree, and the boughs and often the stem are much curved. The timber is but little used for construction, but Dr. Stewart had seen it used for the sticks on which the passenger by the swing-bridge sits, and on which his life depends. It is very resinous, and is generally reckoned the best of all for torches and fuel, but on account of the value of its fruit is not often taken for these purposes. Major Longden says that the Kanawaris do not use its resin as it gets too hard, but he extracted excellent tar from the wood by destructive distillation. On the Sutlej, a rude basket is formed from a piece of the bark having its corners fastened together by wooden pins.

Pinus Griffithii, *Parlatore*, is the *Larix Griffithii* of the N.W. Himalaya; grows at 8000 to 12,000 feet.

Pinus Kämpferi, *Lambert*, *Abies Kämpferi* or golden pine, is a native of Japan, found wild on the mountains of Fako. The handsomest of all the larches; grows to 150 feet; wood hard and durable.

Pinus Khasyana, *Royle*. Tin-yoo-ben, BURM. Found on the hills in British Burma, between the Sitang and the Salwin rivers, at an elevation exceeding 3000 feet. It is a stately tree, sometimes as high as 200 feet to the top. The wood is very rich in resin. In a full-grown tree on good soil the average length of the trunk to the first branch is 80 feet, and the average girth measured at 6 feet from the ground is 9 feet.

Pinus leptolepis, *Sieb. and Zucc.*, of Japan, up to 9000 feet.

Pinus longifolia, *Roxb.*

Tea-dong, . . . BHUTIA.	Thansa, KANGRA, LEPC.
Anander, . . . JHELUM.	Dhup, . . . NEPAL.
Chil, Chir, Salla, KAMAON.	Suloi Dhup, . . .
Gula, . . KANGRA, LEPC.	Nashtar, Nakhtar, PANJ.

A large tree of Darjiling, the Himalaya, Kangra, Simla, Sikkim, Bhutan, grows at 4000 to 7000 feet. This species is, of all the Indian pines (except its near ally *P. Khasyana*), that which is capable of enduring the most heat, and at the same time the greatest variation in amount of moisture, as it is found at elevations of not more than 1000 feet above the level of the sea, equally in the hot, humid valleys of Sikkim, where it enjoys a perpetual vapour-bath, and on the dry sandstone hills of the Upper Panjab, on which rain hardly ever falls. It is only, however, at low elevations, where the mean temperature is high, that it is capable of supporting a great amount of humidity. Heartwood small, soft, and reddish, not durable, and is readily attacked by insects. It is used for shingling, tea boxes, the bottoms of boats; it is often made

PINUS.

into charcoal. The tree yields 10 to 20 lbs. of resin the first year, and about one-third the quantity the second year, after which the tree either dies or is blown down. Tar is extracted from it, and turpentine is distilled from the tar. The bark is used for tanning and for iron-smelting; the charcoal of the leaves, mixed with rice water, is used as ink. The *Pinus longifolia* exudes naturally or yields to incisions a very fine turpentine, which is called Gunda baroza in the bazars, Birje and cheer ka gond, PERS., Bīrozeh tur. But Gunda baroza is a name also given to Indian olibanum. The natives of the Outer Himalaya prepare tar in a simple way from fragments of the wood. The dry chips are put into a large earthen pot with a narrow neck, containing about 10 seers, and in the bottom four or five small holes (one-fifth inch) are drilled. The pot thus filled is luted over with stiff wet mud on the top and sides. A hole being dug in the ground, a smaller pot, holding $\frac{3}{4}$ seer, is placed in it, and the larger one on the top; the joint being luted, and the surrounding space filled up with earth, a heap of cow-dung bratties (15 seers) is piled over the whole, and as much more as is required to keep up the fire for eight or nine hours. The residue of each pot gives 5 chitaks of tar and 1 seer of charcoal; four men will easily make 2½ maunds, or 9 large pots full of tar, in the month, and the cost will be Rs. 21, viz. four men at 5 rupees = 20 rupees; purchase of pots, 1 rupee; on 2½ maunds = 3 annas 8 pie per seer. The value of the charcoal, near the railway or a large town, will reduce the cost of tar to 3 annas per seer, or probably less. The product appears to be equal to the tar imported from Europe, which is prepared on a larger scale. Mr. J. D. Smithe, civil engineer, adopted a modification of this plan at the Madhopur workshops. On the large pot, holding 12 seers, and filled with chips, he placed a smaller one inverted, luting the joint and upper surface with stiff mud, five inches thick; these vessels, thus prepared, are put on the top of a third, which we may call the receiver, and, as in the former method, the joint being luted, the whole is covered with fuel, and a fire lighted. Four to eight hours are necessary to extract all the tar. After the fire has been extinguished and the vessels have cooled, the ashes should be raked out, until the under vessel or receiver is visible; the large pot should then be carefully lifted off with a thick cloth in the hands. As the layer of mud is essential for the preservation of the vessels, time and fuel will be saved if by careful management the coating is not broken; each time it is renewed a considerable expenditure of fuel takes place. Care is necessary in lifting the large pot to prevent lute or ashes falling into the receiver which contains the tar. The charcoal should then be taken out of the large vessel and the tar out of the receiver, when they are ready to be charged again, as at first. Common bazar pots may be used, and with good management they may be fired 10 or 12 times; the economical working of the tar factory very much depends upon care and attention. The pots may be worked in a row 1½ foot apart;—by this arrangement there will be a great saving of fuel. The average produce, according to Mr. Smithe, is as follows:—One seer of wood yields 2-6th chitaks of tar and 4-8d chitaks of charcoal, giving 6-9th chitaks as the produce of each seer of wood put into the pot, or 48·1 per

PIPER BETLE.

cent. To produce a seer of tar, 6 seers 4 chitaks of fresh chips are required for charging a pot, and 2 maunds 6 seers and 9 chitaks of chips for fuel. The estimated cost is about one anna per seer, which, however, seems to be too low. The pots for the tar-making process should be charged with chips about 1 or 2 inches thick and 3 to 5 inches long. The tar produced by the above process, from the chips of deodar (*Cedrus deodara*), Chil (*Pinus longifolia*), or Kail (*Pinus excelsa*), is of a superior description, equal to Swedish tar. It is a mixture of resin and oil of turpentine, more or less blackened by the admixture of empyreumatic products; it thickens after exposure to the atmosphere, and may be used for coating boats; it is valuable as a preservative for all the woodwork of dams, regulating bridges and railway sleepers, also for telegraph posts and wooden fencing.

Pinus Merkusii, *Jung*, Tin-yoo-ben of the Burmese, grows near the Toung-gyin river, associated with *Dipterocarpus*; splinters are used for torches.—*Roxb.*; *O'Sh.*; *Royle*, *Ill.* p. 350; *Wall.*; *Stewart*; *Cleghorn*; *Bellw.*; *Hooker*, *ii.* p. 43; *Gamble*; *Brandis*; *Von Mueller*; *Cal. Cat. Ex.*, 1862; *Thomson's Tr.*

PIPAL. SANSK. *Urostigma religiosum*, *Mig.* Gaz pipal is the *Plantago major*, also *Abies Smithiana*, and *Paras pipal* is the *Thespesia populnea*. *Urostigma religiosum*, the poplar-leaved fig tree, is the celebrated tree of Buddha Gaya, of which a shoot has been cherished at Anaradhapura for twenty centuries. Such trees are maintained in the courtyard of nearly every vihara or temple in Ceylon as objects of veneration.

PIPAL-PAN. TAM., TEL. A small ornament of the shape of a leaf of the *Urostigma religiosa*, suspended in front of the pubes of young Hindu girls. It is of gold, or silver, or copper, and is their sole available concealment. Young Hindu boys have a little tube of gold, silver, or copper, with a ball at each end, strung on a string.

PIPE-CLAY.

Khurra, DUKH. | NARAM, TAM. This is of a greyish-white colour, with an earthy fracture, and a smooth, greasy feel; it adheres to the tongue, and is very plastic, tenacious, and infusible. When burnt, it is of a cream colour, and is used for tobacco-pipes and white pottery. It is found in abundance in several parts of India, and is used for the same purposes that it is in Europe. Some castes of Hindus also employ it for making the distinguishing marks on their foreheads, and (moistened with water) it is often applied round the eye in certain cases of ophthalmia, as well as to parts of the body that are bruised.

PIPERACEÆ, the pepper tribe of plants, of which the species of the genus *piper* are the most important. They are herbs, undershrubs, or shrubs of the tropical regions in both continents, and about fifty species of the genus *piper* occur in the East Indies, viz. betle, chaba, cuneifolium, lonchites, longum, malamiri, nigrum, peepuloides, plantagineum, reptans, ribesioides, sarmentosum, saxatile, stenophyllum, subpeltatum, sylvaticum, triocum, and ulisefolium.

PIPER BETLE. *Linn.* Betel, betel vine.

	Chavica betel.	
Tambul,	ARAB.	Barg-i-tambul, . . . PERS.
Ku-tsang,	CHIN.	Tambula, SANSK.
Tu-pih-poh,		Vettilei, TAM.
Pan,	HIND.	Tamalapaku, TEL.

PIPER CUBEBA.

The leaves of this vine and of *P. siriboa* are extensively used by the natives of the East and West Indies to chew along with the nut of the *Areca catechu* and quicklime, as a restorative of the powers of the stomach and promoter of digestion. It is capable, however, of producing, like some other species of piper, intoxicating effects, and should be used in moderation. Piper betle is largely cultivated throughout the Peninsula of India and in Ceylon. In Pegu it grows wild in the Pegu forests, on the Cadoojway Choung.—*Hogg; Eng. Cyc.; M.C.L.; Voigt.*

PIPER CUBEBA, Cubebs; tailed pepper.
Cubeba officinalis, Miguel.

Kababeh,	ARAB.	Komoon koos, . . .	MALAY.
Dumki mirchi, . . .	DUKH.	Suganda marichi, . .	SANSK.
Koobab-chini, . . .	HIND.	Val mellaghu, . . .	TAM.
Lada barekor, . . .	MALAY.	Salava mirialu, . .	TEL.

A plant of the Archipelago; its fruit is largely used in medicine.—*Hogg.*

PIPER LONGUM. *Linn.* Long pepper.
Chavica Roxburghii, Mig.

Dar filfil,	ARAB.	Chalai jawa, . . .	MALAY.
Pipool,	BENG.	Pipal, Maghz pipal, .	PERS.
Peik khy-en, . . .	BURM.	Pipil, Filfil-i-daraz, .	"
Piperi,	GR.	Dar-filfil,	"
Pipel, Pipula moola, .	HIND.	Pippalu, Krishna, . .	SANSK.
Gaz pipal,	"	Pipili,	TAM., TEL.

A native of the south-east of Asia, growing wild in India, along water-courses, towards the Circar mountains, but is much cultivated. The female spike having attached to it the dried half-ripe berries (resembling the catkin of the birch), is used in medicine. It has nearly the same chemical composition and properties as black pepper, though feeble. It is said to contain piperin. The root (*Granthicka, SANSK.*), sliced and dried, constitutes the *Pipula moola* of the native druggists, a substance much used as a stimulant remedy and spice by the Hindus, but it is still weaker than the fruit. Long pepper is a creeper of easy culture, and should be trained on poles, or have strong sticks to grow upon. It is common in all parts of India, is extensively cultivated in the Northern Circars; its use is rather limited, but as, in the commercial returns, it is always included with black pepper, the quantity cannot be ascertained. Long pepper is readily propagated by cuttings. The stems are annual, and the roots live for several years, and, when cultivated, usually yield three or four crops, after which they seem to become exhausted, and require to be renewed by fresh planting. Its berries are lodged in a pulpy matter like those of *P. nigrum*. They are first green, becoming red when ripe. Being hotter when unripe, they are then gathered and dried in the sun, when they change to a dark-grey colour. The spikes are imported entire. The taste of the berries is pungent, though rather faint.—*O'Sh.; Jaffrey; M. E. J. R.*

PIPER METHYSTICUM, Ava pepper, a native of the Society, Friendly, and Sandwich Islands. It is used in a tincture in chronic rheumatism, and in infusion as an intoxicating beverage, which is also deemed antisyphilitic. To cure venereal, the patient drinks an infusion until he becomes drunk, after which copious perspiration ensues. The national beverage in the Kava of Polynesia is prepared from the root and extreme base of the ; they are preferred fresh, but are nearly as good when dry. Reducing the roots to minute particles, according to Polynesian usage, by chew-

PIPER NIGRUM.

ing, is a task in Fiji by lads who have sound teeth; in other Polynesian islands it is done by young women. On public occasions, or at carnival meetings, when the chewed root is placed in the bowl and water is poured on, the whole assembly begin to chant appropriate songs, and this is kept up until the dregs of the root have been strained. The beverage has the look of coffee with plenty of milk in it, and an aromatic, slightly pungent taste, which, when once acquired, must, like all acquired tastes, be enticing.—*Dr. Seeman, Viti; O'Sh.*

PIPER NIGRUM. *Linn.* Black pepper vine.
Filfil aawad, ARAB. Filfil gird, PERS.
Maricha, Gol-mirch, BENG. Filfil-i-Siab, Pilpil, . . .
Nga-yok-koung, BURM. Kolukung, Marchu, SANSK.
Piperi, GR. of Hippoc. Mareechang, Vellajung, . .
Kala-mirch, HIND. Gaminiris, SINGH.
Gol-mirch, BABAREE, SYRIAN.
Choca mirch, Molago valli, TAM.
Lada, MALAY. Mirialu, Moluvu kod, TEL.
Molago-kodi, MALEAL.

A climbing plant, native of Malacca, Java, and Sumatra; found wild among the hills of the Rajamundry district, but cultivated all along the Malabar coast, in Sumatra, Borneo, the Malay Peninsula, and all countries to the east of the Gulf of Siam. The best pepper comes from Malabar, the least esteemed from Java and Sumatra. The pepper vine is very common in the hilly districts of Travancore, especially in Cottayam, Moenachel, and Chenganacherry districts, where at an average calculation about 5000 candies are produced annually. Its cultivation is very simple, and is effected by cuttings or suckers put down before the commencement of the rains in June. The soil should be rich, but if too much moisture be allowed to accumulate near the roots, the young plants are apt to rot. In three years the vine begins to bear. They are planted chiefly in hilly districts, but thrive well enough in the low country in the moist climate of Malabar. There they are usually planted at the base of trees which have rough or prickly bark, such as the jack, the erythrina, cashew nut, areca, and mango. They will climb about 20 or 30 feet, but are purposely kept lower than that, at 12 to 15 feet. During their growth it is requisite to remove all suckers, and the vine should be pruned, thinned, and kept clear of weeds. The berries are gathered before they are perfectly ripe, and quickly dried on mats in the sun, by which they turn black. When plucked too young, they speedily fall into a state of powder. Such are separated from the others by sieves and winnowing. In this condition it is termed black pepper. White pepper is the same fruit freed from the outer rind; for this purpose the ripe berries are allowed to macerate in water, and the husk is removed. These are smaller, smooth, of a greyish-white colour, varying to yellow, with a less powerful odour and taste than the black. The root is a tonic and cordial. Both Piper nigrum and Piper longum grow wild in considerable quantities in the hilly tracts of Goodem, and probably along the whole of the extensive range of the Eastern Ghats. The latter finds its way in small quantities down to the bazars on the coast, but the black pepper is entirely neglected, and does not appear to be gathered even for local use. Black pepper and long pepper appear to have been used as febrifuges in the east from the earliest periods. The powder and the root of long pepper have been much employed in

Hindu medicine. The root is said to be bitter and dry; it is a stimulant tonic, is employed for coughs and indigestion, also fever. The black pepper from the forests of Malabar and Travancore for centuries has been an article of exportation to European countries.—*Roxb.*; *Ainslie*; *Eng. Cyc.*; *M. C. C. Ind. Ann. Med. Science*; *Powell*.

PIPER RIBESIOIDES. *Wall.* Tau kwou, **BURM.** *Piper sylvaticum*, *Roxb.*, a native of the mountains on the north-west border of Bengal, where the natives call it pahari pipal, or mountain long pepper, and use it, both green and ripe, in their dishes. In the botanic garden it blossoms, and the berries ripen during the rains.—*Roxb.*

PIPER TRIOECUM. *Roxb.* Mirial tigh, **TEL.** Circar mountains, in shady places; with rich soil, fruit succulent, small, round, red, excessively pungent; an important article of commerce from Madras.—*Roxb.*; *O'Sh.* p. 575.

PIPSA, a troublesome dipterous insect which swarms on the banks of the streams in Sikkim; it is very small, floating like a speck before the eye. The bite of the pipsa leaves a small spot of extravasated blood under the cuticle, very itating if not opened. It resembles a flea, and is found on the banks of the Rungeet river, in Sikkim. See *Mura*.

PIPTANTHUS NEPALENSIS, a plant on the Tendoing, in Sikkim, with golden blossoms.—*Hooker's Journ.* ii. p. 6.

PIPTURUS PROPINQUUS. *Weddell.* A bush of the Eastern Islands, South Sea Islands, and East Australia, with a fibre similar to that of the China grass, *Boehmeria nivea*. *P. velutinus*, *Weddell*, is closely allied.—*Von Mueller*.

PIR. **HIND.** A Muhammadan saint, a religious instructor. *Pir zadah*, son or descendant of a *pir*. Amongst the Kurds of Persia, *pir* is a title, though it means literally an old man or old woman. It is often united with *Murshid*, a guide to the right path, i.e. salvation. *Pir-o-Murshad* is applied reverentially to the religious teachers of the Muhammadans of India and Persia, but is also used in addressing people of high rank.

Piran-i-Pir, the saint of saints, i.e. *Dastagir*, the *Pir-i-Dastagir Sahib*, a Muhammadan walee or saint whose tomb is at Baghdad. He is considered the chief of their saints. A Muhammadan festival is held on the 11th of Rabi-us-Sani, in honour of Syud Abdul-Kadar Ghilani, or *Pir Piran*, a Sufi teacher, native of Ghilan, who taught and died in Baghdad. *Sadi* studied under him.—*Herk*.

Pir Jalal—? oblations are offered at his shrine.

Pir Mangho, a place of Muhammadan pilgrimage, 10 miles west of Kurachee, famous for its hot springs and crocodile tank, from which it is erroneously supposed to derive its name, the crocodile here being the long-snouted garial, not the short-nosed muggur. About a hundred of these are kept in a marsh close by, called *muggurtal-do*.—*Dr. Buist's Catalogue*.

PIRACY is described in the earliest Malay romances, and is spoken of in glorifying the brave deeds of their ancestors. Piracy has always been frequent along the coasts of China. Pirates continue to infest the Sulu Sea and the southern ports of the Philippines. They come in the middle of the western monsoon, and return in the beginning of the eastern monsoon. They seem to come mostly from Lanun Bay, on the

south coast of Mindanao. Dampier, in 1686, calls them the Hillanunes, living in the heart of the country of Mindanao. They are bold, but rarely attack European ships, generally the trading schooners manned by Malays. Their prahus are open boats, about 50 feet long, 12 wide, and 4 deep. They have a swivel throwing a 1 lb. ball, but their plan of attack is to throw themselves in overpowering numbers on board of their prey. Magindano pirates, every year, with their long prahus, well manned, visit some part of the Archipelago, robbing, destroying, killing, or making captive all they meet with. The Dutch and the British have done very much towards suppressing piracy, but the Spaniards nothing. In the Persian Gulf, and on the western coast of India, until the beginning of the 19th century, piracy had prevailed, and in the 17th and 18th centuries an extensive system of piracy prevailed on the Arakan coasts and in the Delta of the Ganges, in which some Portuguese leaders joined.

Piracy from pre-historic times has been a profession with several maritime tribes of the East India, who have preyed on commerce on all the coasts from Africa to the remotest islands of the Archipelago. The present seat of piracy in the Indian Archipelago includes Mindanao, Sulu, and the crowd of other islands extending from Mindanao to the north-east coast of Borneo, and separating the Mindoro from the Sulu Sea. Formosa to the Sulu Archipelago and Mindanao is all included, and embracing the Philippine and Basayan groups. In the early part of the 19th century, pirates made their haunts chiefly about Lingen, the island of Billiton, and the west coast of Borneo.

On the western side of the Peninsula of India, pirate races were harassing the seaport towns at the time of the arrival of the Portuguese. The Sidi chiefs of Janjira and Sachin and the Mahrattas engaged in it on the western coast, and even at the present day some of the races on the littoral of Cutch and Cambay are scarcely restrained from following this as a profession. Up to the close of the 18th century, the islands of Kenery and Colaba, near Bombay, were the resort of these predatory bands.

The British continue to guard against piracy in the Persian Gulf up to the present day, and armed ships of the Indian and British navies, all through the close of the 18th and in all the 19th century, have been employed there in protecting commerce. *Ibn Haukal*, in his version of the Koran, informs us that before the deliverance of the children of Israel from Egyptian bondage, the subjects of a pirate monarch in these parts seized on every valuable ship which passed. The possession of a few ports within and near the entrance of the Persian Gulf, where it is not more than 30 miles across, enabled them to perceive and sally out on all passing vessels. In recent times, the Muscat Arabs, during the period of their ascendancy, from 1694 to 1736, were highly predatory; but it was not until 1787 that the Bombay records made mention of the systematic continuance of piracy.

The race whose power and influence were long felt by the neighbouring tribes, and is still intimately connected with their political condition, occupy a part of the coast within the Persian Gulf, comprehended between the mountain range

and the sea-shore, and extending in that direction from Kasab to the island of Bahrein, a distance of 350 miles. On the map, this portion bears the designation of the Pirate Coast. To the Portuguese during their brief career in India, they proved quite as troublesome as they did in the latter part of the 18th century to the British; with these robbers the Imams of Muscat have been repeatedly at war. In 1809, an expedition was sent against them under Captain Wainwright, in His Majesty's ship *Chiffonne*. Their principal stronghold, Ras-ul-Kheima, was stormed and taken, and 50 of their largest vessels burnt or destroyed. Leit, on the island of Kishm, and several other ports, were reduced; but though this had the effect of checking them for a time, they soon rebuilt these ports, and gradually returned to their old practices. The inhabitants of the Pirate Coast consider themselves to be far superior to either the Bedouin or town Arab. The latter, especially those from Oman, they hold in such contempt, that a Muscatti and an arrant coward are by them held to be nearly synonymous. They are taller, fairer, and in general more muscular than either of the above classes, until they attain the age of 30 or 40 years, when they acquire a similar patriarchal appearance.

After 1809, there were some overt acts of attempted piracy, but these were easily prevented by the Indian navy, and on one serious attempt, in 1833-34, *Ras-ul-Kheima* and *Shaya*, vessels of large size, with some 2000 fighting men on board, were prevented from coming out on a piratical enterprise. They were met by one ship of war (*Elphinstone*), and driven back to their ports with great slaughter, and they surrendered a few days afterwards.

The Pirate Coast of Arabia extends from Ras-ul-Kheima to Abuthabee.

Lingah is the chief town of the piratical Joasmees, on the Persian side. It is close to the sea, in lat. 26° 33' N., about 24 miles from Kishm.

Ramsce town is in lat. 25° 33' N., and is near Ras-ul-Kheima, in lat. 25° 48' N., and lat. 56° 4' E. It is the centre of the pirate ports, and their chief town, containing a thousand houses. It is situated on a point of land projecting into the sea; within the point is a deep narrow bay. Eleven miles from Ras-ul-Kheima is Hamra, a low sandy islet, and near it, on the mainland, the villages of Aruulgavine, Ejman, and Fasht. To the west of the town of Shargah is a small lagoon in which the dows are anchored. South-west of Shargah is the small town of Boo Haile.

The Beniya tribe inhabit the most northerly district of Oman, called Sir (Seer). The tribe has three branches,—Beniya, Manasir, and Owaimir. Those inland possess a fine breed of camels, and are nomades, migrating yearly; the coast dwellers fish in small boats, and dive for pearls. Their pearl fishery is accounted to produce 10,000 tomans yearly. They seize the small boats that approach their coasts. They can furnish 20,000 excellent musketeers.

The Badoo of the town of Huailah, of Khor-Hassan, and Zobara are agricultural and pearl fishers. Within the space of twelve hours, 5000 Badoo could be marched down to the coast.

Ojeyr is the chief seaport of the Wahabees. From Ojeyr to Kateef is two days' journey, and

the district is occupied by Uttoohee Arabs, but the Badoo occupy from Kateef to Grane.

The islands of Inderabia and Basheeb are occupied by traders, shepherds, and farmers.—*Bikmore*, p. 318; *Wallace*, ii. p. 29; *Persian Gulf Selections*; *Wellsted's Travels*, i. p. 243.

PIR BABA, a Muhammadan saint, whose shrine is at Buner, 10 miles E. of Elai. About 400 or 500 fakirs, etc., are in attendance.—*MacGregor*, ii. 5.

PIRI. TAM. A Ceylon tree, which grows to about 20 feet in height and 2 feet in diameter. Its wood is very close in its grain, and is used by the natives for the frames of vessels, and in house work. It produces a fruit which is of no use.—*Edge of Ceylon*.

PIR PANJAL, a range of mountains which extends for about 40 miles between the Baramula pass and Pir Panjal, or Nandan Sar pass, and rising to 16,500 feet above the sea. The most picturesque road into Kashmir traverses the Pir Panjal pass, and is known as the Gujavat and Pir Panjal route. The top of the pass is a fine grassy plateau, about half a mile wide, with an elevation of about 11,500 feet, gradually sloping down to the Aliabad sami.

Pir Panjal pass is called also the Sona Gulli; it is open for foot-travellers from the 20th April, and for horses about 20th May, and is shut for 3½ months in the year. Hodgson, Herbert, and the Gerards state 11,500 feet as the height up to which forest trees grow in alpine India, east of the Sutlej. The Pir Panjal range of hills is visible from the Shalimar gardens in Kashmir. Muhammadans say the range derives its name from Panj, five, and Pir, saints, five pious brothers having settled on it, and performed several wondrous feats around; but the name seems to be Pansal, which in the Kashmirian language signifies a pass, and Pir, a devotee. Europeans and Persians call the whole mountain Pir Panjal, but the natives restrict the name to the pass. The mass of this range, according to Vigne, is basaltic.

PIR POINTEE, Father Pointee, or St. Pointee, a Musalman saint. His tomb, resembling that at Sicrigully, though less picturesquely situated, stands on a little cliff above the river, with some fine bamboos hanging over it.—*Heber's Journal*, i. p. 199.

PIRZADAH. PERS., HIND. Son of a Pir, from Pir, a saint, and Zadah, the offspring. It means a religious devotee of the Muhammadans, but not an ascetic, and is considered a reverential appellation. In India, the five famed of these Muhammadan holy men are Ghazi Miyan, whose tomb is at Baraitch; Pir Hathili, sister's son of Ghazi Miyan; Pir Jah'l, of Lucknow; Pir Muhammad, of Jounpur; and another. They are known as the Panch-Piri.—*Pottinger's Travels*, p. 139; *Oudh*, p. 125.

PISACHA, a daughter of Daksha, and wife of Kasyapa. Pisacha, in Hindu life, is a marriage obtained by a forcible abduction, the most objectionable of all the Hindu forms of marriage.

PISACHA. SANSK. An evil spirit, a devil, a ghost, one haunting burning or burying places. The most malignant order of malevolent beings, lower than the Rakshasa. The Pisacha is mentioned several times by Menu (i. 37, 43, v. 50, xii. 44). He is classed with Rakshasa and Yaksha, who are described as eating flesh meat and unclean food.

Pisacha is the Sanskrit word for *Peygal*. *Pisachi*, female.—*Williams' Story of Nala*, p. 177. See *Pei*; *Peisacha*.

PISH, *Chamaerops Ritchieana*? In Baluchistan, Las, and Makran, the *Gudhaf* or *Gudhap* or *Gudhab* of the Arabs grows luxuriantly among the hills. It is seemingly a palm. It has fan-shaped leaves, which are used for the Makrani houses, and for making mats, bags, shoes, ropes, pipes, cups, etc. Its pith is made into tinder; between the top leaves is a palatable stalk; its small acid berries also are edible, and make rosary beads.

PISHING or *Pisheen*, a valley to the west of Baluchistan, separated from the valley of *Kanhee* by a range of mountains. It is to the west of *Seistan*.—*Ritchie*, ii. p. 13. See *Kalat*.

PISHON of *Genesis*, supposed to be the river *Indus*.

PISONIA, a genus of plants of the marvel of *Peru* tribe, of the order *Nyctaginaceæ*. *Pisonia inermis*, *Kongi-putri*, *DUKH*, is without thorns.—*Lindl*.

PISONIA MORINDIFOLIA. *Lutchi-kottay-ellay*, *TAM*. The leaves of this pretty lettuce tree make tolerable greens cooked with cocoanut, chillies, etc.; leaves of a light-green colour, turning nearly white during the hot months.—*Jaffrey*.

PISONIA VILLOSA. *Poir*.

<i>Pisonia aculeata</i> , <i>Roxb.</i>	<i>Tragularia horrida</i> , <i>Kon.</i>
<i>Bagh-achura</i> , . . . <i>BENG.</i>	<i>Konki</i> ; <i>Kanki putra</i> , <i>TEL.</i>
<i>Karu Indu</i> , . . . <i>TAM.</i>	<i>Embudi chettu</i> , . . . <i>TEL.</i>

A plant of Bengal and the Peninsula of India, seen growing everywhere. Prickly *pisonia* makes impenetrable hedges. *Konki*, in Telugu, means a hook, and has reference to the thorns, which are aculeate backwards, and very prehensile.—*Roxb.*

PISTACHIO NUTS, or *Pistachia* nuts.

<i>Pistacie</i> , . . . <i>DAN.</i>	<i>Pistacchi</i> , <i>Pastuchi</i> , <i>IR.</i>
<i>Pistajes</i> , . . . <i>DUT.</i>	<i>Pistacie</i> , . . . <i>LAT.</i>
<i>Pista chenoot</i> , . . .	<i>Fistica</i> , <i>Pistacha</i> , . . . <i>PORT.</i>
<i>Pistaches</i> , . . . <i>FR.</i>	<i>Fistaahka</i> , . . . <i>RUS.</i>
<i>Pistachen</i> , <i>Pistacie</i> , <i>GER.</i>	<i>Alfocigos</i> , <i>Pistacho</i> , . . . <i>SP.</i>
<i>Piste</i> , . . . <i>HIND.</i>	<i>Pistacie</i> , . . . <i>SW.</i>

A small oily seed, the produce of *Pistacia* vera. They are oblong and pointed, about the size of a filbert, enclosing a kernel of a pale greenish colour, covered with a yellowish or reddish skin. They have a pleasant, sweetish, unctuous taste, and are chiefly served up at the dessert. *Pistachio* nuts are imported into Bombay from the Persian Gulf, also into N.W. India, through the Bolan pass. They are eaten with relish by natives.—*Faulkner*.

PISTACIA, a genus of plants belonging to the natural order *Anacardiaceæ*. Seeds solitary, each without albumen. The species are—

P. Atlantica, *Desf.*, —?
P. Cabulica, *Stocks*, *Sind*.
P. integerrima, *H. f. et T.*, N.W. Himalaya.
P. lentiscus, *L.*, S. Europe, N. Africa.
P. terebinthus, *L.*, *Voigt*, S. Europe, N. Africa.

Pistacia Atlantica, *Desf.*, *Tagho*, *PUSHTU*, yields the *Rumi mastiki* or *Kundar rumi* of the bazars of the Panjab; used in asthma, also mixed in ointments.

Pistacia Cabulica, *Stocks*, *Khinjak*, *PUSHTU*. A tree of *Sind*, yields a resin similar to mastic.

Pistacia integerrima, *H. et T.*, *Zebra-wood* tree.

Rhus integerrima, *Wall.*

<i>Kakrein</i> , . . . <i>BEAR.</i>	<i>Kakkeran</i> , <i>Toongoo</i> , <i>RAV.</i>
<i>Kakra</i> , . . . <i>CHENAB.</i>	<i>Kakra-Singhi</i> , . . .
<i>Kakrei</i> , <i>Tanhari</i> , . . .	<i>Kakaangche</i> , . . . <i>SUTLEJ.</i>
<i>Khakkar</i> , . . . <i>JHELUM.</i>	<i>Sarawan</i> , . . . <i>TRANS-INDUS.</i>
<i>Kangar</i> , . . .	<i>Shne</i> , <i>Maana</i> , . . .
<i>Drek</i> , <i>Georgoo</i> , <i>KASHAN.</i>	

This ornamental tree grows in many places in the Panjab Himalaya at from 1500 to 5500 feet, also in Simla, Garhwal Hills, Hazara, and Afghanistan. Its zebra-coloured wood is in great demand amongst Europeans for chairs and cabinets; it is also made into oil mills. The leaves and young shoots are browsed. The fruit, *sumak*, is given in indigestion. The *kakra-singhi*, a large, hollow, horn-like curved gall, with a tawny-brown rough exterior, is considered hot, dry, and astringent, and is used by natives in coughs and asthma, fever, piles, and dysentery. It is also said to allay vomiting, thirst, and difficulty of breathing.—*Cleghorn*; *Stewart*; *Powell*, i. p. 338.

Pistacia lentiscus, *Linn.*, *Mastic* tree.

<i>Mastaka</i> , . . . <i>ARAB.</i>	<i>Rumi mastiki</i> , . . . <i>HIND.</i>
<i>Uluk bagh-danu</i> , . . .	<i>Kundar rumi</i> , . . .
<i>Kinnah</i> , . . .	<i>Kinnah</i> , <i>Kinnoli</i> , . . . <i>PERS.</i>

A native of the south of Europe, North Africa, and Asia Minor, introduced into the Calcutta Garden in 1806. The bud, bark, leaves, and fruit have all been used in medicine, but have been laid aside in modern times. The leaves are evergreen; fruits very small, pea-shaped, reddish when ripe. The resin is called—

<i>Rumi mastaka</i> , . . . <i>ARAB.</i>	<i>Ulmastiga</i> , . . . <i>SP.</i>
<i>Gum mastic</i> , . . . <i>ENG.</i>	<i>Kinnoli</i> , . . . <i>TURK.</i>
<i>Kundar rumi</i> , . . . <i>PERS.</i>	

Mastic is obtained from the trunk by incisions made in the month of August. It occurs in oval tears of variable size, smooth, diaphanous, brittle, breaking with plane, brilliant, glassy, and pale yellow surface, and owing to its brittleness being usually covered with its own dust. Its odour is agreeable; flavour weakly balsamic; it softens in the mouth, and becomes ductile like white wax. It melts at a moderate heat, and then exhales a sweet odour. Mastic is quite insoluble in water; it yields to alcohol 80 per 100 of soluble matter, leaving a substance resembling caoutchouc, which is slowly dissolved by ether. This resin gives its name to the process of mastication, being largely chewed in the east. It is much used by dentists for filling up carious teeth; it is burned as incense; and in some parts of Greece it is added to bread in small quantities to give it an agreeable flavour. Mastic is extensively employed as a transparent varnish, dissolved in turpentine or alcohol, with other resinous bodies. A species of mastic, called *tum*, is obtained in Africa from the *Pistacia Atlantica*. The true resin is sold in all the bazars for about three rupees the seer. It is used by hakims in diarrhoea and diseases of the stomach or liver. It comes from *Käbul*, but the best is said to come from Turkey and the Levant, hence called *Rumi*.—*Roxb.*; *O'Sh.* p. 278; *Porell*.

Pistacia terebinthus, *Terebinthus vulgaris*.

<i>Katinge rumi</i> , . . . <i>ARAB.</i>	<i>Zungbari</i> , . . . <i>PERS.</i>
<i>Butam</i> , . . .	<i>Sukhur</i> , . . .

A native of Barbary, Greece, and the south of France. A resinous juice of much value is afforded by this tree. It is seldom seen in clumps or groves. It is said to produce cypress or chian turpentine, and to supply a kind of follicular gall. Its small, brown, dried fruits, called *Habul-Khizra*, are said to come from Bokhara, and to

be used as an astringent in special diseases, and for palpitation of the heart.—*Powell*.

Pistacia vera, Linn., Pistachio tree. *Fistak*, *Pista*, HIND. A large bush or small tree, from 15 to 20 feet high, of Asia Minor, Syria, Persia, N. Turkestan, Mid Asia, Bokhara, Kâbul, Koh-i-Kush, and S. of Europe. It yields the pista or pistachio nut, of which about 140 tons are annually imported via Peshawur and the Bolan pass. The gall found on it, pista-ka-phul, gul-i-pista, and bazghanj, or bozaghanj, are imported into Bombay from the Persian Gulf, and used as an astringent medicine, also as a dye for silk. By the Hindu physicians the fruit is considered a warm and moist remedy; the kernel contains much oil, and acts as a demulcent and restorative. It is principally used in special diseases. The bark is employed as a tonic in indigestion. The galls act as astringents, and are used in diarrhoea. According to Mr. Elphinstone, it grows wild in the Hindu Kush. The almond and the pericarp are imported into India from Kâbul, with the kind of gall termed gul-i-pista, and a resin called aluk-ul-imbât.—*O'Sh.* p. 276; *Royle's Ill.* p. 178; *Faulkner; Birdwood; Powell*, i. p. 337.

PISTIACEÆ, Lemnads, or Duck-weeds, a natural order of endogenous plants. The species are floating or land plants, with very cellular, lenticular, or lobed fronds or leaves. The common duck-weed, *Lemna*, may be regarded as the most simple of all phænogamous plants. It inhabits the ditches of the cool parts of the world. *Pistia* is found in the tropics; *Ambrosinia* in the basin of the Mediterranean.—*Eng. Cyc.*

PISTIA STRATIOTIS. Linn., Rozb., Rh.

Unter ghunga, . . .	DUKH.	Agasa-tamare, . . .	TAM.
Toka pana, . . .	HIND.	Antara-tamara, . . .	TEL.
Taka pana, . . .	"	Akasa-tamara, . . .	"
Kodda pail, . . .	MALBAL.	Niru budiki, . . .	"

An aquatic stemless plant, growing in all tanks and ditches. It is said to occasion dysentery to those who drink the water. Its juice is given medicinally. The natives of several districts of Southern India were in the habit of using the fresh living plants of the *Pistia stratiotes* or *Agasa-tamare* for attracting and stupefying bugs, but large quantities of this plant were collected and tried in several hospitals and public institutions, and found useless.

PISUM ARVENSE. Wight.

Keia, . . .	BENG.	Mattar, . . .	HIND.
Wan tau, . . .	CHIN.	Mattar rewari, . . .	"
Tsing, siau, tau, . . .	"	Kala mattar, . . .	KAGHAN.
Bisillab, . . .	EGYPT.	Karani, . . .	KASH.
Field pea, . . .	ENG.	Kulawan, . . .	SIMLA.

Cultivated throughout India, sown after the rains in drills, and varies in price according to the quality; when green, they are tolerable as a vegetable, but are best in soup. Procurable in December and January.—*Riddell*.

PISUM SATIVUM. Linn.

var. *a. macrocarpum*, Ser., sugar pea.
var. *β. quadratum*, L., Chota-mutur, grey pea.
var. *γ. agreste*, Patna pea, common field pea.

Hummus, . . .	ARAB.	Shanma; Ahandil, LADAK.
Khandoo; Sen, . . .	BEAS.	Watana, . . . MAHR.
Burra-mutur, . . .	BENG.	Kaohang, . . . MALAY.
Common pea; Pea, . . .	ENG.	Harenso, . . . SANSE.
Patana, . . .	GUJ.	Rata-gora-dya, . . . SINGH.
Mutur; Khandu, . . .	HIND.	Vella pattani, . . . TAM.
Batanah, . . .	"	Patanu, . . . TEL.
Batani, . . .	"	Gundu sanighelu, . . . "

This is the pea of the garden. Cultivated throughout the plains of India, and grown in the N.W. Himalaya up to 14,000 feet. At the latter height it does not ripen its seed, and is used as fodder. It is found in the Sutlej valley, between Rampur and Sunnam, at an elevation of 8000 to 14,000 feet. Cultivated in Kanawar and Spiti. 100 parts of the pea, from Benares, yielded—Moisture, 12·65; nitrogenous matter, 23·50; starchy matter, 60·28; fatty or oily matter, 1·11; mineral constituents (ash), 2·41.—*Ainslie; Eng. Cyc.; Cleghorn*, p. 66.

PITA. TAM. Aloe or agave fibre.

Centala, Bankeora, HIND. | Petha kalabuntha, . TAM.

The species of agave commonly called aloe plants are natives of America, which have become so naturalized in many parts as to appear to be indigenous in Africa, parts of India, and in the south of Spain. The agave plants resemble the true aloe in their sword-shaped leaves with parallel veins, which, however, grow to a gigantic size—that is, from eight to ten feet in length—in a cluster from the root, with their margins usually armed with short thorns, and their points with a hard and sharp thorn, which makes them useful hedge plants; the leaves abound in fibres of great length, of considerable strength, also tough and durable. The Mexicans make their paper of the fibres of agave leaves laid in layers. The expressed juice of the leaves evaporated, is stated by Long, in his History of Jamaica, to be also useful as a substitute for soap.—*Royle, Ill. Him. Bot.* p. 375; *Royle, Fib. Pl.* p. 4.

PITAKA, Tein-pitaka, three divisions of the sacred writings of the Buddhists. Pitakattayan, or the three Pitaka, do not seem to have been committed to writing until B.C. 85, or 458 years after Sakya's death, during the reign of Watta Gaminī, king of Ceylon.—*Hardy; Fytche*, p. 167.

PITAMAHA, born at Gauri Sankar, and lived at Kuru Kshetra. He taught that the world, time, and space, like God, are eternal; and he enjoined the practice of the three sects, Saiva, Sakta, and Vaishnava.—*Ward*, iv. p. 31.

PITAMBAR (from Pita, SANSE., yellow, and Ambar, cloth), a yellow amber-coloured cloth, or soft silk dhoti, ten yards long, forming both a skirt and a body covering, or worn by men as a dhoti. The silk pitambara of India, or men's silk loin-cloths, are worn by Hindus at entertainments and festivals, as also in religious worship. Saris are nearly universal for Hindu women's wear, and sousse, made into petticoats and trousers, is as universal for Muhammadan women and men also; and it has this advantage over saris, that the colours and patterns differ very little anywhere within the confines of India; whereas saris, dhotis, and loongis must be made to suit particular localities, and the patterns of one locality would inevitably be rejected in another. See Clothing.

PITAMBARA, clothed in yellow garments, the colour of the clothing of Buddhist and Hindu religious ascetics.

PITAPUR, in Gujerat, occupied by the Bagela race.

PITAR, father, is derived from the Sanskrit root Pa, which means to protect, to support, to nourish. The father, as genitor, was called in Sanskrit Ganitar, but as protector and supporter of his offspring he was called Pitar; hence, in the

Veda, these two names are used together, in order to express the full idea of father. Thus the poet says—

'Dyaus me patā ganitā,
Jovis mei pater genitor,
Ζεύς ἡμῶν πατήρ γενίτωρ.'

In similar manner, Matar, mother, is joined with ganitu, genitrix, which shows that the word Matar must soon have lost its etymological meaning, and have become an expression of respect and endearment; for among the early Aryans Matar had the sense of maker, from Ma, to fashion. In the non-Aryan nations of Europe and Asia, the terms are—

Language.	Father.	Mother.
Turkish,	Baba.	Ana.
Georgian,	Mama.	Deda.
Mantshu,	Ama.	Eme.
Javanese,	Bapa.	Ibu.
Malay,	Bapa.	Ma.
Syami (Tibet),	Dhada.	Ma.
Arabic,	Ab-Walid.	Walid'ah.
Tibetan,	Pha.	Ama.
Serpa (Nepal),	Apa.	Amma.
Murni (Nepal),	Apa.	Ama.
Pakhya (Nepal),	Babal.	Ama.
Persian,	Pidr.	Madar.
Lepcha (Sikkim),	Abo.	Amo.
Bhutani,	Appa.	Al.
Dhimal (N.E. Bengal),	Abā.	Ama.
Koch (N.E. Bengal),	Bap.	Ma.
Garō (N.E. Bengal),	Abā.	Ama.
Burman (Burma),	Ahpa.	Ami.
Mru (Burma),	Pa.	Au.
Sak,	Abā.	Anu.
Talaiin (Siam),	Ma.	Ya.
Ho (Central India),	Appu.	Enga.
Santhali (Central India),	Baba.	Ayo.
Uraon (Central India),	Baba.	Ayyo.
Gayti (Central India),	Baba.	Da.
Khond,	Abba.	Daya.
Tuluva (Southern India),	Amme.	Appa.
Badaga (Southern India),	Appa.	Avve.
Iruia (Southern India),	Amma.	Avve.
Singhalese,	Appa.	Amma.
Chinese,	Fu.	Mu.
Tamil,	Appa.	Amma.
Telugu,	Tandri.	Thullea.

—Lubbock's *Origin of Civil*. p. 415.

PITCH.

Zift, Kar, ARAB., TURK.	Pitch,	GUJ., HIND.
Sung-shu-kau, . . . OHIN.	Pee,	Ir.
Brad, Poix,	FR. Smola-gust aja, . . .	RUS.
Pech,	GER. Pex,	SP.

Pitch is the residuum of tar, inspissated by heat or boiled down to dryness. In China, black dammer and impure elemi are used as substitutes for pitch. In British India the black dammer is used similarly.—*McCulloch*.

PITCHER PLANTS are of the natural order Nepenthaceæ, and there are several species in Ceylon, the Khassya, the Malay Peninsula, Sumatra, Java, and Borneo. *N. rajah*, *N. Lowii*, *N. Edwardsiana*, are all Borneo species. Other known species are *N. ampullacea*, distillatoria, *levis*, *phyllamphora*, and *Rafflesiana*. They are quite common near Mount Ophir in Malacca, and the pitchers there contain about half a pint, and are beautifully ciliated with large cilix; the broad pitcher—for this, like the *Rafflesiana*, produces two kinds—is generally crimson; the long pitcher differs from the other in its trumpet shape and green colour, which is spotted with crimson. The leaves are moderately large and broad,—at least those of them which produce the broad pitcher, and which are found near the base of the plant,—are dark green above, and of a fine peach-coloured red beneath. The *Nepenthes ampullacea* produces green or spotted short and broad pitchers; it is also a climbing plant, and found in thick jungles. The old stems falling

from the trees become covered in a short time with leaves and vegetable matter, which form a coating of earth about them; they then throw out shoots, which become in time new plants; but apparently the first attempts to form the leaf are futile, and become only pitchers, which, as the petioles are closely imbricated, form a dense mass, and frequently cover the ground as with a carpet of these curious formations. As it continues growing and endeavouring to become a plant, the laminae of the leaves gradually appear, small at first, but every new one increasing in size, until finally the blades of the leaves are perfect, and the pitchers, which, as the leaves developed themselves, have become gradually smaller on each new leaf, finally disappear altogether when the plant climbs into the trees. This formation of the pitcher may afford an instructive lesson to the naturalist, as, though not to the same extent, the principle is perceptible in all of this curious tribe, the leaves of seedlings and weak plants always producing the largest pitchers. The best known to Europeans is *Nepenthes distillatoria*, *Ait.*, of the Khassya mountains; it is the *N. phyllamphora* and *N. Indica*, *Lam.* None of the plants of Borneo so much attract curiosity as the various and beautiful pitcher plants, eight different species of which were discovered in the western part of the island. The pitchers, which in some instances would contain upwards of a pint of water, hang from the midrib of the leaf of which they are a formation; they precisely resemble pitchers, being furnished also with a lid. The *Nepenthes Rafflesiana* produces its pitchers singly; they are large and generally crimson; it grows on rocky islands in the neighbourhood of Singapore, and it is easily distinguished from its near ally, the native of Borneo and Mount Ophir, by its inferior size, shortness of the column which supports the lid, the white and powdered appearance of its stems, and its bushy habit, never exceeding four or five feet in height. The largest Borneo one, *Nepenthes Hookeriana*, grows in shaded jungles, climbing to the tops of the trees. The pitcher is nine inches in length, having a large lid standing on a column, which is a continuation of the beautiful edge of the pitcher; that part which is broadest and turned towards the midrib of the leaf from which it depends, is furnished with two broad wings.—*Wallace*, i. p. 31; *Low's Sarawak*, p. 68.

PITH, ENG., *Sola* or *Shola* of Hindustan, is obtained from the *Æschynomene aspera*. At the Madras Exhibition of 1855, the Trichinopoly Local Committee exhibited a large collection of figures and architectural models, carved in the pith of the typha. The attitudes of the figures were stiff, but the draperies characteristic. Also pith work made from the rushes called *Nultee* in Tanjore.

PITHA-STHANA. SANSK. Seat or place of a seat. Of these are 51 places where the limbs of Sati fell, when scattered by her husband Siva, as he bore her dead body about, and tore it to pieces after she had put an end to her existence at Daksha's sacrifice. At the *Jwala-Mukhi*, *Vindhya-Vasini*, *Kalighat*, and others of the Pitha-Sthana, the temples are erected to the different forms of Sati or Devi, and not to the phallic emblem of Siva, which may be there as an ornament or accessory, but not as a principal.—*Garrett*.

PITHECOLOBIUM ANIMALLAYANUM of Beddome. This very beautiful tree, with its large spreading head, is very conspicuous in the moist woods on the higher ranges of the Animallays, 5000 to 8000 feet, and other hills to the south of them. *P. bigeminum*, *Martius*, is a large tree of the Himalaya and S. India.—*Beddome, Fl. Sylv.* xvi. p. 189.

PITHECOLOBIUM DULCE. *Willd.*
Inga dulcis, Willd. | *Mimosa dulcis, Rozb.*
Manilla tamarind, Eng. | *Karka puli, . . . TAM.*

This tree is supposed to have been introduced from the Philippine Islands, but it is common throughout the Madras Presidency; it is one of their best coppice fuels, and is largely grown for that purpose, and is also much used as a hedge plant. A cubic foot of unseasoned wood weighs 50 to 53 lbs., and when seasoned 40 lbs., and its specific gravity is .640; it is hard, coarse-grained, and brittle, of a reddish-brown colour, and when sawn emits an unpleasant odour; it is used for country carts, packing-boxes, and the panelling of doors.—*Beddome, Fl. Sylv.* p. 188.

PITHECOLOBIUM SAMAN is the rain tree. It grows rapidly.

PITHECOLOBIUM SUBCORIACEUM. *Thur.* Meemini mara, SINGH. A large tree 30 to 40 feet high, growing, not uncommon, at an elevation of 4000 to 6000 feet in the central province of Ceylon; wood unknown.—*Thur. Zeyl.* part ii.

PITHECUS, the orang-outang. The following species are known:—

Pithecus Brookei, Bl. *P. Wurmbii* et *P. Abelii*, *Owen*, though neither the species described by Van Wurmb, nor that by Dr. Abel, the *Mias rambi*, *MALAY, Brooke*. A native of Borneo.

Pithecus curtus, Blyth, the *Mias chapin* of the Dyaks. A Borneon species.

Pithecus morio, Owen, *Mias kassar, MALAY, Brooke*. From Borneo.

Pithecus Owenii, Bl., small orang with short forearms. Adolescent female. Hab. unknown.

Pithecus satyrus, L. apud *Brooke*, *S. Muller*, and others, *Mias pappan, MALAY, Blyth*. From Borneo.—*Ben. As. Soc. Journ.* No. 4, p. 383.

PITHORAGARH, a military cantonment in Kanan district, North-Western Provinces; lat. 29° 35' 35", and long. 80° 14' 30" E.—*Imp. Gaz.*

PITI. HIND. Pulse of the kind called mah ground up into a fine paste with water.

PITI and **Hungrung** are two valleys in the Himalaya. That of the Piti river is entered from Kanawar by the Hungrung pass, elevated 14,800 feet; the Parang pass, 18,500, leads over the range dividing the Parang from the Piti rivers. The district of Piti, which was formerly almost independent, but paid tribute to, or exchanged presents with, all the Tibetan countries in its neighbourhood, namely, with Garu, Ladakh, and Lahul, as well as with Kanawar, followed, in 1846, the fortunes of Lahul in being transferred to British rule. It is a very thinly populated valley, the villages being small and distant, and the arable tracts of no great extent. The mountains on its southern border, by which it is separated from Kanawar, are so very elevated that they wholly intercept all access of humidity from the districts to the northward of them, and render the climate entirely rainless. The houses are in consequence very generally built of unburnt bricks, made of the fine lacustrine clay so common in

the valleys, and their flat roofs are thickly covered with a layer of the same material. The gradual transition, in ascending the Suttlej, from Hinduism to Buddhism, is very remarkable, and not the less so because it is accompanied by an equally marked change in the physical aspect of the inhabitants, the Hindus of the Lower Suttlej appearing to pass by insensible gradations as we advance from village to village, till at last we arrive at a pure Tartar population. The people of Upper Piti have quite the Tartar physiognomy, the small stature and stout build of the inhabitants of Ladakh, to whom also they closely approximate in dress. To what extent mere climatic influences may cause these differences, and how far they depend on an intermixture of races, it is difficult to decide. It is impossible, however, to avoid being struck by the coincidence between these physical and moral changes in the human race, and the gradual alteration in the forms of the vegetable world, which are observable as we advance from a wet to a dry climate.—*Thomson's Travels in W. Himalaya and Tibet*, p. 109; *H. f. et T.* p. 223.

PITRA BAKSH, from Pitra, paternal ancestors, the Patrii of the Romans, is a Hindu festival about the end of September, on the last day of Bhadrpada or first day of Aswin, on which offerings of fire and water are made to the manes of deceased ancestors. See Astronomy.

PITRI, the soul of a deceased ancestor; also the manes of ancestors to whom the obsequial worship *Sradha* is performed. They are the *Ferialia* of the Romans, and in Hinduism also embrace the ten *Prajapati* or mythical progenitors of the human race; also the sons of the gods, according to a legend in the *Harivansa*, and in the *Vayu-Purana*, though all the *Puranas* give similar accounts of the *Pitri*.

The offerings to ancestors are balls of rice and flour (*pinda*); thus of a simple nature, as was the case with the Romans; for *Ovid*, in his *Ferialia*, remarks ironically, *Parva petunt manes*,—the manes are easily satisfied.—*Wilson; Dowson*.

PITRI, the Aryan divinity of food.

PITRI-ISWARA. The worship of the ancestral manes, the *Pitri-iswara* or father-gods of the Rajputs, continues for fifteen days. The ruler of Mewar goes to the cemetery at Ara, and performs at the cenotaph of each of his forefathers the rites enjoined, consisting of ablutions, prayers, and the hanging of garlands of flowers and leaves sacred to the dead, on their monuments. Every chieftain does the same amongst the altars of the 'great ancients' (*barra boora*); or, if absent from their estates, they accompany their sovereign to Ara. See *Dharma-raja*.

PITRI-MEDHU, SANSK., from *Pitri*, forefathers, and *Medhu*, flesh. The early fathers, the progenitors of the human race, their manes, the *dii patrii* and *dii manes* of the Romans.

PITRI-PATI, lord of the manes; *Yama*, judge of the dead.—*Dowson*.

PITT, WILLIAM, Prime Minister of Great Britain. In 1784 he introduced a Bill in the British Parliament to establish a Board of Control over the Court of Directors of the East India Company. The Board was to consist of six Privy Councillors, who were to act as Commissioners, having control and superintendence of all the affairs of the British possessions in the East

India. Of these six, two were to be the Chancellor of the Exchequer and one of the Principal Secretaries of State, either of whom was to preside, and in their absence the senior of the remaining four. With the senior, who was known by the designation of President of the Board of Control, the whole business of the Board soon rested; he was essentially a new Secretary of State. The Bill materially diminished the powers of the Directors of the East India Company.

PITTA and **Kaloochia**. **URIYA**. Pitta, a tree of Ganjam and Gumsur, extreme height 36 feet, circumference 3 feet, and height from the ground to the intersection of the first branch, 15 feet. Pitta is used for posts, ploughshares, and firewood as the kaloochia, but is a larger tree and very plentiful.—*Captain Macdonald*.

PITTAL, a cultivating race in Rajputana, who are supposed to be Kurmi under another name.—*Campbell*, p. 93.

PITTAPUR, a large zamindari in Rajamundry.

PITTOSPORACEÆ, *Lindl.*, of 3 genera, 9 species, viz. 7 *Pittosporum*, 1 *Billardiera*, 1 *Sollya*. Wood of *Pittosporum bicolor*, *Hk.*, and *P. undulatum*, *Vent.*, from Victoria and New South Wales, is white, adapted for turners' purposes, and recommended as a substitute for the boxwood used by engravers. *P. tobira*, *Rozb.*, is a pretty shrub of China. Mr. Gamble names *P. glabratum*, humile, dasycaulon, ferrugineum, tetraspermum, Nilghirense, eriocarpum, and floribundum.

Pittosporum Ceylanicum, *Wight*, *Ill.*

P. floribundum, *W. et A.* | *Senecia Nepalensis*, *D. C.*
Celastrus verticillatus, *R.* | *Katteya-gass*, . . . *SINGH*.

A moderate-sized tree of the Oova district of Ceylon, growing at an elevation of 3000 to 5000 feet.—*Thw. Enum. Pl. Zeyl.* i. p. 68.

Pittosporum tenuifolium, the lemon tree of New Zealand, attains to 12 or 15 feet in height. It yields a fragrant resin.—*G. Bennett*.

PITTS, JOSEPH, of Exeter, visited Mecca A.D. 1678.

PITT STRAIT, called Sagewyn by the Dutch, is bounded on the north by Battanta Island, and on the south by the north coast of Sallawatty and the group of small islands stretching from thence to the adjacent coast of New Guinea. Its length is about 39 or 42 miles, and its greatest breadth is about 7 or 8 miles. Pitt Strait and Dampier Strait are separated from each other by Battanta Island.

PITYRANTHE VERRUCOSA. *Thw.* *Kleinohovia verrucosa*, *Gardn. MS.* This tree is found in Ceylon, in the Batticaloa, Jaffna, and Trincomalee districts.

PITYRIASIS VERSICOLOR, a parasitic fungus of Melanesia and Polynesia, which causes the vegetable itch, the Tokelu ringworm.

PIYA DASI or **Priya Darsi**, a title of the Buddhist king Asoka, king of Magadha, who lived in the third century B.C. His era is near that of Antiochus the Great.

PLACSHADWIPA, Asia Minor, called also Sakadwipa.—*As. Res.* iii. 304, vi. 515, viii. pp. 264, 288, 297.

PLACUNA PLACENTA, the window shell genus of shells, is found in great abundance in the Tamblegam lagoon near Trincomalee, and their collection was rented out, 18 millions being

gathered annually. The shells are exported to India and China as a substitute for window glass, and small pearls are found in them. On the Coromandel coast of the Peninsula of India, they are found fossil in the tertiary strata of the eastern coast line.

PLAGUE, or **Levantine plague**, also **Bubonic plague**, are terms by which the nations of Europe designate a contagious disease of a severe form which from time to time has appeared as epidemic in Egypt, in S. Arabia, Syria, Turkish Arabia, Southern Persia, extending to Turkey in Europe, Malta, Gibraltar. It is known to the Arabs as Ta'un. It prevailed severely in Baghdad in 1230, and appeared in Egypt in 1842. It broke out at Pali in Rajputana about A.D. 1830-1840, and appeared in China during the fifteen years of civil war, from 1855 to 1870. The Chinese called it Yang-tsee. It prevailed specially in the province of Yunnan and some of the neighbouring districts, and was believed to have been introduced there from Burma, but this unlikely point was never established. On the outbreak of the civil war, it became very prevalent, and was still raging in 1879, though the rebellion had been long put down. The disease first attacked animals which live in or on the ground. The rats, who were the soonest assailed, came out in troops from their holes, and, after staggering about and falling over each other, dropped dead. Buffaloes, oxen, sheep, and deer also very quickly succumbed, but fowls, which spend part of their time above the ground, more often escaped. Those who died of it were supposed to be possessed of a devil, and could not be buried, lest the repose of their ancestors should be disturbed. The bodies were placed on a bier, and exposed to the sun outside the gates, so that the traveller who passed a village where the Yang-tsee was raging was nearly choked by the odours with which he was suddenly brought into contact.—*M. Emile Rocher on the Chinese Malady called Yang-tsee*.

PLAGUSIA POTOUS. *Cuvier*. The Jerree Potoo of Russell, Ikan ledah of the Malays, is a fish of excellent flavour, and, like *Plagusia trulla*, passes at European tables under the denomination of 'sole.' The species are all distinguished for their tenacity of life. The fishermen at Penang assert that some species of *Plagusia* shoal at certain seasons.

PLA-KAT, **SIAM.**, literally fighting fish, is the *Macropodus pugnax*.

PLANCHONIA VALIDA. *Blainv.* A timber tree of the Andamans.

PLANETS in Hindu mythology are minor deities. Brahaspati is not a planet, but 'the lord of prayer.' See *Graha*; *Haft Dhat*.

PLANKS.

Planker,	DAN.	Papan,	MALAY.
Planken,	DUT.	Toletule-oloku, . . .	RUS.
Bordages, Planches, . .	FR.	Plankor,	SW.
Takhta,	HIND.		

Thick strong boards, cut from various kinds of wood.—*M'Culloch's Com. Dic.* p. 920.

PLANT is a term designative of all the vegetable kingdom, which botanists classify into orders, genera, and species, supposed about 500,000. The telegraph plant, *Desmodium gyrans*, has small leaflets in pairs on the leaf-stalks, which exhibit a spontaneous jerking motion.

Vinegar plant is a mould, the spawn (*Mycoelium*)

of which forms a tough web. It is often seen floating in vinegar, and it induces fermentation if placed on saccharine fluids.

The *pitcher plants* are species of *Nepenthes*, growing in Ceylon, Malay Peninsula, Java, Sumatra, and Borneo.

The *hand plant*, *Cheirostemon platanoides*, so called because the curved stamens of the flower have a singular resemblance to a clawed hand, and the ancient Mexicans venerated it.

Venus fly-trap is the *Dioncea muscipula*. On the upper surface of its lobes are six minute bristles (three on each side), and the instant any one of these bristles is touched, the lobes close on each other, and entrap the insect which had alighted on the leaf.

The *Cephalotus* of Australia has pitcher-like leaves.

PLANTAGINACEÆ. *Lindl.* The rib-grass tribe of 1 gen. with 15 species of *Plantago*. Soda is obtained in Egypt from the ashes of *P. squarrosa*.

Plantago amplexicaulis, *Cuv.*, Gaj-pipali, **HIND.** Said to be an astringent.

Plantago ispaghula, *Roxb.*, Spogel seeds.

Buzr katoona, . . .	ARAB.	Ispungur, . . .	SIND.
Fushoon, . . .	GR.	Ispaghul verei, . . .	TAM.
Ispaghul, Isabghul, HIND.		Ispagala vittulu, . . .	TEL.

Cultivated in India during the cold season for the seeds, which are used as an emollient and light article of diet for convalescents. In making a decoction of ispaghul, take of ispaghul seeds two drachms, distilled water one pint; boil and strain. This preparation is a simple demulcent, was recommended by Mr. Twining in dysenteries, and is much used in India in catarrh, gonorrhoea, and nephritic affections.

Plantago major, *Linn.*, Way-bread.

Ch'e'-ta'ien, . . .	CHIN.	Fashiyun, . . .	GER.
Oart-track plant, . . .	ENG.	Bartang, . . .	HIND.

The Chinese name looks like an adaptation of *Psyllium*.

Plantago psyllium, *Linn.*, Flea-wort, **ENG.**, **Bartang**, **HIND.** The seeds, called flea-seed, contain a great quantity of mucilage, and in Britain are extensively employed by muslin manufacturers for stiffening their goods; they are also used by paper-stainers and bookbinders. They form rich mucilaginous drinks, useful in catarrh and other ailments for which linseed is used.—*Roxb.*; *Ainslie*; *O'Sh.*; *Hogg*; *Smith*; *Voigt*; *Powell*.

PLANTAIN, Banana, *Musa Paradisiaca*.

Mauz, . . .	ARAB.	Pisang, . . .	MALAY.
Biyy, . . .	BALI.	Vellakai, Pesang, . . .	MALEAL.
Ng-hyet-praw, . . .	BURM.	Mauza, . . .	PERS.
Nep-yan, . . .	"	Kehl kang, . . .	SINGH.
Mauz, Kayla, . . .	HIND.	Valie pallam, . . .	TAM.
Gadang, . . .	JAV.	Ariti pandu, . . .	TEL.

Plantain is the name applied to various species of the genus *Musa*, of which, in the East Indies, the best known are *M. paradisiaca*, which yields the edible plantain or banana, and *M. textilis*, the Manila hemp plant. The bananas appear to be natives of the southern portion of the Asiatic continent (*R. Brown*, Bot. of Congo, p. 51). Transplanted at an unknown epoch into the Indian Archipelago and Africa, they have since spread also into the new world, and in general into all intertropical countries, sometimes before the arrival of Europeans. Humboldt put a very high value on this fruit as an article of food. Accord-

ing to him, it affords, in a given extent of ground, forty-four times more nutritive matter than the potato, and 133 times more than wheat. In the East Indies it is only used as a dessert. In Jamaica, Demerara, Trinidad, and other colonies, however, many thousand acres are planted with the banana. The vegetation is so rapid, that if a line of thread be drawn across and on a level with the top of one of the leaves when it begins to expand, it will be seen in the course of an hour to have grown nearly an inch. The fruit, when ripe, is of a pale-yellow, from 2 or 3 inches to a foot in length, and 2 inches thick, and is produced in bunches weighing 40 lbs. and upwards. In the Straits Settlements, the most approved varieties are the royal plantain, which fruits in eight months; one which bears in a year, the milk plantain, the downy plantain, and the golden plantain or banana. A variety termed Guindy was imported from Madras, where it was in great esteem. It had this advantage over the other kinds, that it could be stewed down like an apple. The Malays allege that they can produce new varieties by planting three shoots of different sorts together, and by cutting the shoots down to the ground three successive times, when they have reached the height of 9 or 10 inches. In some districts of Mexico, the fruit is dried in the sun, and in this state forms a considerable article of internal commerce, under the name of *plantado pasado*. When dried and reduced to the state of meal, it cannot, like wheat-flour, be manufactured into macaroni or vermicelli, or at least the macaroni made from it falls to powder when put into hot water. The fresh plantain, however, when boiled whole, forms a pretty dense firm mass, of greater consistency and toughness than the potato. The mass, beaten in a mortar, constitutes the 'foo-foo' of the Negroes. Plantain meal cannot be got into this state unless by mixing it up with water to form a stiff dough, and then boiling it in shapes or bound in cloths.

In Pegu there are scarcely any good plantains to be had, owing to the Burmese habit of only eating green fruit, and their total indifference to the finer qualities of flavour. The great use of all fruit with the Burmese is to serve as an addition to their curry, for which purpose one kind of plantain is just as good as another. The plantain or banana holds the same place in Tenasserim that the apple does in England and the United States. It is used as a vegetable as well as an article for the dessert, the great proportion being eaten with rice and meat in the place of potatoes. Like the mango, the *Musa* is indigenous in Tenasserim, but the wild fruit is too full of seeds to be eatable. A species grows wild in Tenasserim jungles, and is rather an ornamental plant, which is all that it has to recommend it. Unlike the common plantain, it never throws up shoots from its roots. The plantain and banana embrace many varieties. Mr. Mason had the Burman names of twenty-five before him. 'The numerous varieties,' writes Voigt, 'we have in vain tried to put in some order. The attempt made for this purpose, in Schultens, appears to us to have only increased the confusion.'

The *Manilla hemp*, from which a fabric of the finest texture is prepared, is made from the leaves of the *Musa textilis*. Several varieties of the banana are cultivated in the Dekhan,

—the large red, the green, and the yellow. A small sort, which is supposed to be the real banana of the West Indies, is perhaps the most luxuriant. The plants blossom at all seasons, and so soon as the drupe of fruit begins to ripen, which is known by some turning colour, it is cut and hung up to ripen in the house. The plant will not bear again, and if not cut down it will perish of itself, on which the surrounding shoots grow up and blossom as the former. The plants are generally grown in beds or clusters in a good, rich soil, when fine fruit is almost the sure return. In transplanting the shoots of 2 or 3 feet high, about one-half is generally cut off; the green fruit is used in curries; the natives of the Peninsula of India also use in their curries the extremities of the flower shoots, the heart of the stem, and that portion of it from which the roots proceed.

The stem yields a fine white silky fibre of 5 or 6 feet in length, specifically lighter than hemp, flax, and aloe fibre, by $\frac{1}{4}$ th or $\frac{1}{8}$ th, and possessing considerable strength. The plantain will flourish in almost any soil where the climate is warm and moist. A young shoot being planted attains maturity in eight months, producing a bunch of fruit weighing 30, 50, and even 100 lbs., and throwing out from its roots and around its stem from 7 to 10 fresh shoots. These will each become a distinct plant, producing its own bunch of fruit. There may be from 300 to 400 plants in an acre, each producing on an average seven suckers, thus making in all from 2100 to 3200 plants in an acre. The produce of fruit at the lowest estimation would be from 900 to 1200 lbs. annually; and this fruit has its market value.

The plant is cultivated everywhere in Southern India, where the varieties are the rustaley, superior table plantain; poovaley, or small guindy variety; payvaley, a pale ash-coloured sweet fruit; monden, 3-sided coarse fruit; shevaley, large red fruit; and putchay laden, or long-curved green fruit. All these yield fibres, but of very different quality. This fibre has a particular tendency to rot and to become stiff, brittle, and discoloured by steeping in the green state, and it has been ascertained by trial that the strength is in proportion to the cleanness of the fibre. If it have been well cleaned, and all the sap quickly removed, it bears immersion in water as well as most other fibres, and is about the same strength as Russian hemp. The coarse large-fruited plantains yield the strongest and thickest fibres; the smaller kinds yield fine fibres, suited for weaving, and, if carefully prepared, these have a glossy appearance like silk. This gloss, however, can only be got by cleaning rapidly, and before the sap has time to stain the fibre; it is soon lost if the plant be steeped in water. The rope ought not to be hard spun, as it becomes stiffer when wet, and is liable to snap if it get into a twist or knot. Almost every part of the plantain may be converted into fibre, but it most abounds in the stem and leaves, and can be made available for textile or cordage purposes. The combings or tow separated during the preparation of the fibres is of value as a substitute for horse-hair for stuffing mattresses, etc.; and the peduncle of the core can be pounded into half-stuff for the paper-makers, and form an excellent material for the finest or the toughest kinds of paper. In the West Indies the spiral vessels are employed as tinder. In the process of

preparation of plantain fibre, the stem should be cut down six inches above the ground, and then divided longitudinally into four parts, and the juice expelled by passing each slip longitudinally through the common sugar-mill, with grooved hard-wood rollers, or a mill the rollers of which are 3 feet long and one foot in diameter. In the process of crushing, the stalks and the harder and softer parts of the stem should be passed through separately, which can be easily effected if the rollers be horizontal. In this way the produce will be four or five pounds of fibre from each tree. The fibres from the midrib of the leaf are the best; and in general if the stem yield four pounds nett of fibre, the stalk will give one pound out of four. After the crushing, the fibres are to be well washed and boiled in soda or other alkaline ley to separate the gluten and colouring matter, keeping the fibres from the several parts quite separate in this process of boiling. They are then bleached, and the highest coloured fibres do not require more than six hours, but the darkest from twelve to eighteen. The finest plantain fibre, when carefully cleaned and dressed, by what may be termed the 'fresh process,' in contradistinction to the system of rotting the fibres free, has been said to be well suited for the imitation of silk in carriage braid and carpet work. The average value put upon such fibres was said to be £70 per ton, when Russian hemp was selling at £50 per ton. In the West Indies, the total expense of producing a ton of fibres was calculated at £9, 13s. 4d. Early in the year 1880, two gentlemen in Bombay commenced operations on a moderate scale at Bassein, giving employment to about 40 day-labourers for a period of above one year; the out-turn of fibre, waste, and paper-stuff, produced at the rate of two tons per diem by the simplest conceivable machinery, and at comparatively trifling cost, readily commanding the following prices, on 9th December 1880, in the Liverpool markets:—Plantain fibre, £20 per ton; plantain waste, £10 per ton; plantain tow, £10 per ton.

From 800 trees, which was the average daily quantity manipulated by Messrs. Price and Lacey, the yield was as follows:—Clean fibre, one ton; waste, half ton; tow, half ton; while the cost of production was Rs. 52:—800 stems at Rs. 2 = Rs. 16; cartage, Rs. 16; 40 coolies, for cutting, splitting, washing, drying, packing, etc., Rs. 10; fuel for engine, Rs. 5; sundries, Rs. 10.

The superintendent of the Calcutta Botanic Garden has found that, during the dry months, simple exposure of the sliced stem to the sun is sufficient to prepare the fibre for the paper-maker, provided the paper-mill be on the spot. What is still wanted is a cheap method of removing the cellular tissue, which contains a large quantity of sap, and is useless for paper-making, so that when shipped on the voyage to England there may be no risk of fermentation.

On the Arakan coast, the layers of the stem of the plantain, termed there *Pa-tha-you-sha*, are sold in a dried state; some of it is even twisted into a bast rope. It would probably command a good price as a cordage or paper material, or for textile fabrics.

The leaves are used in regimental hospitals, for dressing parts that have been blistered.

The meal is prepared by stripping off the husk

PLASMA.

of the fruit, slicing and thoroughly drying the core in the sun, after which it is powdered and sifted. It has a fragrant odour, and its flavour is said to depend a good deal on the rapidity by which the slices are dried. It should be husked and sliced by nickel or bamboo knives, as those of steel injure the colour of the meal. It is calculated that the fresh plantain will yield 40 per cent. of meal, that an average bunch of 25 lbs. weight will yield 5 lbs., and that an acre of plantain walk of average quality producing 450 bunches during the year, would yield upwards of a ton of meal. In the W. Indies plantain meal is largely employed as the food of infants, children, and convalescents. In composition the plantain fruit approaches most nearly in nutritive quality to the potato, and the meal of the plant to that of rice.

	Rice.	Potato.	Plantain.
Starch, sugar, etc., . .	87.4	79.0	86.0
Protein compounds, . .	7.5	8.0	5.2

The varieties which are rich in saccharine matter make an admirable preserve, on being skinned and split longitudinally and dried in the sun, by which process they immediately acquire a consistence like Turkey figs, and become capable of being packed and preserved in the same way.

In S. America, the fruit is not only used as an article of diet in its fresh state, but, when dried, forms an article of internal trade, besides having its flour separated, and cooked or made into biscuits. It is also preserved in the Society Islands.

The skins of the fruit are used by the tanners in dyeing leather black. — *Surgeon T. Key in Proceedings of the Madras Committee; Madras Ex. Jur. Rep.; Royle's Fib. Pl.; Simmonds' Com. Prod.; Dr. A. Hunter in M. E. Proceedings; Mason's Tenasserim; Dr. McClelland in Records of the Government of India; Dr. King in Report of Calcutta Ag.-Hort. Gard.*

PLATMA, a green, semi-transparent calcedony, having a dark tint, which is supposed to be coloured by chlorite. It is found chiefly in India, and is made into beads and other ornaments. Occasionally specimens are found among the ruins of Rome. — *Waterston; Faulkner.*

PLASSEY, on the Bhagirathi river, in the Nadiya district of Bengal, is in lat. 23° 47' N., long. 88° 17' 45" E. It is famous in the history of British India as the scene of a battle which was here fought and won by Clive on the 23d June 1757, with 700 European troops, 1400 sepoys, and 570 sailors, and the victory threw Bengal, Behar, and Orissa into British hands.

Orme states that the nawab, Suraj-ud-Dowla, had 50,000 foot and 18,000 horse, and 50 pieces of cannon, 24 and 32 pounders. There were also 40 Frenchmen, under the command of Sinfray. The action was a cannonade, and Clive computed the enemy's loss at 500 killed, that of the English at 22 killed and 50 wounded.

It was not until the 12th August 1765 that Shah-i-Alam, emperor of Delhi, at a conference with Clive, held at Allahabad, granted to the English E.I. Company the Diwani of Bengal, Behar, and Orissa. Clive agreed to pay to the emperor a tribute of 2 lakhs monthly, from the proceeds of the revenues. But the memorable battle-field has ceased to exist, changes in the bed of the river having swept it almost all away.

PLATANUS ORIENTALIS.

Of the famous mango grove called the Lakha Bagh, or the top of a lakh of trees that was 800 yards long and 300 broad, all the trees have died or been swept away by the river, excepting one, under which is buried one of the nawab's generals who fell in the battle. So long ago as 1801, there were no more than 3000 trees remaining. It is now a cultivated plain. The spot where the solitary tree yet survives is called Pir-ki-jaga, and is held sacred by Musalmans. — *Tr. of a Hind. i. p. 51; Malcolm, vi. p. 256; Orme, ii. p. 173.*

PLATALEA LEUCORODIA, Spoon-bill.

Cherita, . . .	BENG.	Weisser loffeler, . .	GER.
Lepelaar, . . .	DUT.	Chamach-buza, . .	HIND.
Spoon ibis, . . .	ENG.	Becquaroueglia, . .	IT.
Pale, Poche, Truble, . .	FR.	Cucchiarone, . .	"
Spatule, Cueilleur, . .	"	Gentu-muku-konga, . .	TEL.
Loffel gans, . . .	GER.	Llydon big, . .	WELSH.

One of the Plataleinae, the spoon-bill sub-family of birds of the family Tantalidæ, common in India, Europe, Africa, Asia. It breeds in India in lofty trees, but also in marshes. Other known species are—

Platalea major, Temm., Japan.
P. minor, Schlegel, Japan.
P. ajaya, Linn., America.
P. flavipes, Gould, Australia.
P. melanorhynchus, Gould, Australia.

PLATANE, the oriental plane tribe of plants, comprising one genus and four species,—one of Europe and Asia Minor, one N. America, and two from Asia Minor and Central Asia. The *Platanus orientalis* has palmate leaves resembling those of the common sycamore. It grows in the western parts of Asia, and extends as far east as Kashmir. Its wood is fine grained and hard, and when old it acquires dark veins so as to resemble walnut-wood. The tree was valued for its shade by the Greeks and Romans, and it was held sacred in the east. *P. occidentalis* is found in most parts of N. America, from Mexico as far as Canada. The timber is of a reddish colour, and will not bear exposure to the weather. There is but this one genus in the order, and six species. The family resembles Artocarpeæ. — *Hogg; Eng. Cyc.*

PLATANISTA GANGETICA. Gray.

Dolphinus Shawensis, . .	D. Gangeticus.
Platanista of Phny, . .	Sou-sou of India.
Dauphine du Gange, T. Cav. .	Susa of Buffon.

Inhabits the Indian seas, the Ganges and its tributaries. It eats prawns, *Palaemon carcinus*, also the fish *Wallago attu* and *Saccobarrabus fossilis*. The flesh and blubber are eaten by some low castes.

Platanista Indii, *Blyth*, the porpoise of the Indus, is larger than *P. Gangetica*, and of a paler colour. — *Jerdon.*

PLATANUS ORIENTALIS. Linn.

Doolb, . . .	ARAB.	Chunar, . .	HIND., PERS.
Chinar, . . .	HIND., PERS.	Bum, Buin, Bonin, PANJ.	

The oriental plane is indigenous in Asia Minor and in most of the countries of the Levant, and it extends into Kashmir. Ancient Greeks and Romans prized it particularly for the close shadow which its spreading foliage afforded, and they celebrated many of their festivities beneath its branches. A plane tree is mentioned as having existed in Lycium, in the hollow of which the Consul *Lacinius Musicanus* gave a dinner to 19 friends. The wood is much like that of the beech, but it

is less hard, has a finer and closer grain, and is more capable of receiving a good polish; it is, however, very apt to warp and split, is not durable, and is frequently attacked by the worm. Immersing the wood in water for several years, is said to improve its quality. It is used for gun-stocks. According to Belon, the Greeks of Mount Athos were in the habit of making boats of a single piece, out of the trunks of the largest trees. It grows in Kashmir from seed, but requires to be transplanted. Some re-planted by Akbar in A.D. 1588, when seen by Mr. Vigne in 1838 were 20 feet in circumference. Vigne had seen some grand trees in the valley opposite to Therapia on the Bosphorus; and one near Avin, at the foot of the Elburz mountains, measured by him, was 64 feet in circumference. It appears to be tolerably common in Afghanistan, and is frequently seen at villages, etc., in the Panjab Himalaya, extending sparingly east to the Beas, and up to 8300 feet in La. lakh. In the Kashmir valley it is abundant, the trees ranging up to 75 feet high; and Dr. Stewart had noted seven or eight of more than 20 feet, the largest being 28 feet girth in Srinagar, Kashmir. The spread of two trees measured by him had a radius of 37 and 44 feet respectively in one direction. The finest grove in Kashmir is the Nazim Bagh, on the banks of the lake, near the city of Srinagar, which at one time consisted of 1200 noble trees, said to have been planted about the 17th century. To the eastward it does not thrive. In Kābul, where timber is scarce, Irvine states that it is the only material for gun-carriages; and in Kashmir it furnishes part of the wood for making the small painted boxes.—*Dr. Stewart; Book of Trees*, p. 152; *Royle's Ill.* p. 344; *Hugel's Travels in Kashmir*, p. 85; *Cleghorn's Pan. Rep.*

PLATAX ARTHRITICUS. *Cuv. and Val.*
Ikan bonna, *Bell.* | *Chatodon arthriticus*, *C. and V.*
The total length of this fish is 1 foot 7 inches. It inhabits the seas of Penang, Sumatra, Java, and Singapore. The flavour is excellent, the large air-vessel is thin, and yields little isinglass.—*Cuv. and Val.*

PLATINUM or Platina, Kum-phok, BURM., Peh-kin, CHIN., from Plata, silver. An important metal, first made known in Europe by Mr. Wood, assayer-master in Jamaica, who met with its ore in 1741. In 1750 he published a paper upon it in the Philosophical Transactions. The name was given to it on account of its colour; it was originally called Platina del Pinto, because it was found in the auriferous sand of the river Pinto. It has since been found in China, Burma, Brazil, Colombo, St. Domingo, and in the Ural mountains. It occurs along with gold in the Hukong valley, and metal-workers alloy it with copper and silver, with which they form bowls of tobacco-pipes. It is said to be found also in the Shan states. The sands of the Namtowa river, about 36 miles S.E. of Jeypore in Upper Assam, on the other side of the mountains, is the most prolific source of the platina.—*As. Res.* xviii. part ii. p. 279.

PLATO, B.C. 429–348, the Iflatun of the Arabs, an illustrious philosopher of Greece, son of Ariston and Perictione. He was born at Athens in May 429 B.C. From his twentieth till his twenty-eighth years he studied under Socrates, the Suorat of the Arabs, a great part of whose discourses he committed to writing. He resided then in Egypt and

afterwards in Italy, and then returned to Athens, where for some time he taught at a place called the Academy. On the invitation, however, of the elder Dionysius, he went to his court, but his free speaking displeased the tyrant, who is said to have sold him as a slave. He was bought by Annicerus, a native of Cyrene, who freed him, and he returned to Athens. The books which exist consist of a long series of dialogues, with Socrates as the chief interlocutor. They are dialectical, ethical, and physical. His original name was Aristocles, but he received the name of Plato from the breadth of his forehead and chest. Plato, Epicarmus, and others adopted a philosophy similar to that of the Vedānta, a system of perceptions of primary or secondary qualities. He died on his 82d birthday, B.C. 348. He had Aristotle as a pupil.

PLATTER LEAVES, used by the Hindus, are made of leaves of the *Eugenia jambolana*, *Ficus Bengalensis*, *F. cordifolia*, *F. religiosa*, *Mangifera Indica*.—*Birdwood, Arts.*

PLATYCERCUS HYPOPHONIUS, *G. R. Gray*, is called by the Malays 'Kastori raja,' or prince parrot, from its being the most brilliantly plumaged of all that family. *Platycercus vulneratus*, of Timor, a green species of parrot?

PLATYCERIUM, a genus of staghorn ferns of Australia, of which *P. alaicorne* and *P. grande* are the more remarkable. *P. (Acrosticum) alaicorne* retains much moisture in its dead, sterile fronds, which form large scales, rising one over another. In stormy weather they are sometimes thrown down by the weight of water and vegetable matter thus accumulated about them. *Platycerium grande*, *J. Sm.*, is the elkhorn fern of Borneo and neighbouring islands.—*J. Backhouse, Visit to Australia.*

PLATYCODON GRANDIFLORUM. *Smith.* Kih-kang and Kih-hung, CHINESE. A plant of China of the Campanulaceæ or Bellwort tribe, from the provinces of Sze-chuen, Hu-peh, Ho-nan, and Shan-si. It is said to be used to adulterate ginseng.

PLAVA, a name of the men of Bhutan.

PLAYFAIR. Several relatives of this name served as medical and military officers in the 19th century in the East India Company's armies of Madras and Bengal. Dr. Sir Lyon Playfair, C.B., an eminent chemist and philosopher of Great Britain, was at one time in Bengal. Lieutenant-Colonel Playfair wrote on the Fishes of Zanzibar, also a History of Aden.

PLECOTUS AURITUS. *Jerdon.*

Pl. Darjilingensis, Hodgson. | *Pl. homochrous, Hodgson.*

The long-eared bat of Europe and Darjiling. *Pl. Timorensis, Geoffroy*, is from Timor.

PLETOCOMIA, a genus of palms, growing in Malacca, Java, Assam, and the Khasya Hills, with leaves of great length, having a hook at the end by which to support themselves. *P. Himalayana, Griff.*, is the Rhenoul of the Lepchas. It is not a very large plant, but it climbs lofty trees, and extends 40 yards through the forest; 6500 feet is the upper limit of the palms in the Sikkim Himalaya, the Rhenoul alone attaining this height. Griffith also described *P. Assamica* and *P. Khasyana*, and Kurz mentions *P. macrostachya* of Tenasserim.—*Hooker*, i. p. 147; *Seeman; Gamble.*

PLECTRANTHUS PARVIFLORUS. *Willd.*

PLECTRANTHUS RUGOSUS.

P. graveolens, *R. Br.*, a plant of N. Holland, with blue or purple flowers.

PLECTRANTHUS RUGOSUS. *Rottler.*

Lumnitzera densiflora, *Sprenger.*
Isodon plectranthoides, *Schrad.*

Poomar, Chugu, CHENAB.	Pok, Roebang, . . SUTLEJ.
Sola, Sola, . . .	Chiohri, Toarb, . .
Plea-killer, . . . ENG.	Sirru kalengu, . . TAM.
Bui, . . . JHELM.	Khwangere, . . TR-INDUS.
Kot, Siringri, Itait, RAVI.	

A small, rather slender, shrubby plant, has a wholesome, pleasant-tasted, bulbous root, much eaten by the natives, particularly during the period of their great festivals. Its leaf is rough and not unlike that of Borage; it grows in the Himalaya at Mount Chur, Sirmore, Dehra Doon, and at Tinnevely. It is abundant in the Panjab Himalaya from 3000 to 9000 feet, and occurs in the Salt Range. In places it is used as bedding to keep off fleas. The leaves have an aromatic, sago-like smell, and a somewhat bitterish taste.—*Ainslie*; *Stewart*, *Panjab Plants*; *Voigt*.

PLECTRANTHUS SECUNDUS. *Roxb.*

<i>P. cordifolius</i> , <i>D. Don.</i>	<i>P. incanus</i> , <i>Lam.</i>
<i>P. mollis</i> , <i>Spreng.</i>	<i>P. Nagpurensis</i> , <i>Roll.</i>
<i>P. divaricatus</i> , <i>Weinm.</i>	<i>Ocimum molle</i> , <i>Att.</i>

A plant of Mysore and the Western Dekhan, Kandalla, Roza, Ellora; also in Nepal.—*Roxb.*

PLEURONECTES SOLEA, the sole.

Kowlie mutchie, DUKH.	Naak meen, . . . TAM.
Kan leda, . . . MALAY.	

—*Ains. Mat. Med.* p. 155.

PLEUROPTERA, a tribe of mammals, generally known as the flying lemurs, flying cats, and flying foxes. See Mammalia.

PLINY, a historian of Rome, whose name was Caius Plinius Secundus, born A.D. 23. He died A.D. 79, suffocated by a pestilential vapour near Mount Vesuvius. He was a voluminous author, but most of his works have been lost. The *Historia Naturalis* or *Historia Mundi* still remains; it is in 37 books. Notices occur in it of Khuzistan, Koh, Lokman, Okelia, and the Kol race.

PLOCARIA CANDIDA. *Nees.*

Eucheuma spinosa, —?

Kyook puen, . . . BURM.	Ceylon moss, . . . ENG.
Hai-tsai, Hai-tsau, CHIN.	Agar-agar, . . . MALAY.

This is abundant on the east coast of the Bay of Bengal. The Chinese name Hai-tsai means sea vegetable, and is applied to all the *Algæ* used as articles of diet. Agar-agar is also applied by the Malay race to the *Gigartina tenax* and *Sphærococcus* growing on the rocky shores of Malaysia. The *Plocaria* genus of plants belongs to the alliance *Algales*, the order *Ceramiales*, and the sub-order *Sphærococcales*. One of the species, *P. helminthocorton*, a native of the Mediterranean, is called Corsican moss, and has a considerable reputation as a vermifuge. *Plocaria candida* is abundant on the Tenasserim coast, and is valued for invalids. It was first brought to public notice by Dr. O'Shaughnessy as the edible moss of the Eastern Archipelago, and referred by him to the genus *Fucus*. The fructifications, however, being in small tubercles, the Rev. Mr. Mason considered it as a species of Agardh's genus, *Sphærococcus*, which now constitutes a member of the genus *Plocaria*. It is an allied species with the Ceylon moss (*Gigartina lichenoides*), first described as *Fucus amylaceus* by Dr.

PLOTOSUS ANGUILLARIA.

O'Shaughnessy, the *Plocaria lichenoides* of Mr. Mason; also with a species found on the coast of Devonshire in England, *P. compressa*; likewise with the Corsican moss of the Mediterranean, *P. helminthocorton*; also with the agar-agar, *P. tenax*, a species used in China as a substitute for glue and gum-arabic, but differs from the Irish moss or *Chondrus crispus*, and is not of the same natural family as the Iceland moss, which, indeed, is a lichen, the *Cetraria Islandica*. The Tenasserim moss is wholly free from the bitter principle which renders other fuci so objectionable. Mr. Mason seems to consider it identical with the Ceylon moss, for he gives the same account of it as Dr. O'Shaughnessy gives to that from Ceylon. It contains, he says, a considerable proportion of starch, and was hence named by Dr. O'Shaughnessy the starch fucus, *F. amylaceus*, but its specific name has been since changed to *candida*, white, probably from a mistaken idea that the substance is naturally white, whereas it becomes so only by bleaching in the sun; its natural tint is a shade between olive and purple, such as the natives designate red. According to Dr. O'Shaughnessy, 100 parts contain—Vegetable jelly, 54.5; true starch, 15.0; wax, a trace, 0.5; ligneous fibre, 18.0; gum, 4.0; sulphate and muriate of soda, 6.5; sulphate and phosphate of lime, 1.0; iron, a trace, 0.4. From the tendency of pectine or vegetable jelly to form insoluble compounds with saline and earthy bases, it is necessary to steep this fucus for a few hours in cold rain-water as the first step in its preparation. This removes a large portion, if not the entire, of the sulphate of soda, leaving all the gelatine and starch. It should next be dried by the sun's rays, and ground to a fine powder. When ground, boiling for 25 minutes or half an hour dissolves all the starch and gelatine. The solution while hot should be passed through muslin or calico, and thus the ligneous fibre is removed; lastly, the strained fluid should be boiled down till a drop placed on a cold surface gelatinizes sufficiently. With milk and sugar, and flavoured with lemon-juice or sherry, this substance, when so prepared, would afford the invalid a pleasant article of diet. It may be available in several processes of art and various manufactures.—*O'Shaughnessy*; *Mason's Tenasserim*.

PLOCEINÆ, the weaver birds, the tisserins of the French, a sub-family of the Fringillidæ and tribe Curvirostræ. They form curious pensile nests.

Ploceus baya, *Blyth*, the common weaver bird, Ceylon, all India, Assam, Burma.

P. manyar, *Horsfield*, Burma, Archipelago.

P. Bengalenis, *Linn.*, black-throated weaver bird,

British India, Assam, Tiporah, Burma.

P. Philippinus, —? Java, Burma.

They build nests like a crucible, with the opening downwards, and usually attach them to the tender branches of a tree hanging over a well or tank. *P. baya* is found throughout India; its nest is made of grasses and strips of the plantain or date palm leaf stripped while green. It is easily tamed and taught some tricks, such as to load and fire a toy cannon, to pick up a ring, etc. *P. Bengalenis* occurs also in Hindustan and Burma. *P. manyar* is of all British India.

PLOTOSUS ANGUILLARIA and *Pl. albilabris* occur in the seas of the Malay Peninsula. At

Penang, the latter species is less numerous; both are eaten by the poorer classes of natives. The wounds of both are equally dreaded. *Plotosus canius*, *Buch. Ham., Cal. Cat.*, is the *Notopterus lallasi*, *Cuv. et Val., Cal. Cat.*

PLOTUS MELANOGASTER. *Gmelin.*

Goyar, BENG. | Banwa, HIND.
Indian snake bird, ENG. | Sili, SIND.
Chakuri, GOND. | Kallaki pitta, TEL.

This beautiful diver is found throughout all India, Ceylon, Burma, and Malaya. In some parts it is exceedingly numerous, but they hunt singly. They swim and dive with rapidity, float low in the water, the head and neck alone visible. The lengthened scapular feathers are looked on as a badge of royalty by the Khasias, and they are esteemed by all. They were the badge of one regiment of the Bengal irregular cavalry. It has a hair sieve at the far end of its stomach, which prevents the passage of bones into the small intestine.—*Jerdon*, ii. p. 866.

PLOVER.

Pluvier, FR. | Piviere, IT.

Is a name applied in ordinary conversation to species of birds of the families *Cursoridae* and *Charadriidae*.

Cursorinae.

Cursorius Coromandelicus, *Gm.*, Indian courier plover.
Rhinoptilus bitorquatus, *Jerd.*, double-banded plover.
Glaucola orientalis, *Leach*, large swallow plover.
G. lactea, *Temm.*, small swallow plover.

Charadrinae.

Squatrola Helvetica, *Gm.*, grey plover.
Charadrius longipes, *Temm.*, golden plover.
Agialitis Geoffroyi, *Wagler*, large sand plover.
Æ. pyrrhorostrax, *Temm.*, small sand plover.
Æ. cantianus, *Latham*, Kentish ring plover.
Æ. Philippensis, *Scopoli*, Indian ringed plover.
Æ. minutus, *Pallas*, lesser ringed plover.

The courier plover runs about rapidly, nodding its head occasionally when it stops, running for a distance at speed, suddenly stopping, erecting the body, and then starting off again. The large and small swallow plovers hawk over the fields of grain or runways of grass, catching insects in the air.—*Jerdon*.

PLUKENET. Leonard Plukenet's works were published in London between 1696 and 1705, in 4 volumes quarto, containing 454 plates, with 2740 figures of plants, many of them Indian. These figures are small, and often much reduced from the natural size, especially when the plants were large, but are generally very characteristic; they are much less costly and more easily procured than those of Van Rhee. de.

PLUM.

Nai; Kia-king-ta'ze, CHIN. | Prugna, IT.
Blomme Svedske, DAN. | Ameixa, PORT.
Pruim, DUT. | Sliva, RUS.
Prune, FR. | Aruela, SP.
Pflaume, GER. | Plommen, SW.

The fruit of the tree *Prunus domestica*, indigenous to the greater part of the northern hemisphere; 274 varieties of this fruit are enumerated. Dried plums form an article of commerce under the names of prunes and prunellas.—*Smith's Mat. Med.*; *Faulkner*.

PLUMBAGO, black lead, graphite.

Blyant, DAN. | Tshernyi Karandash, RUS.
Potloot, DUT. | Lapiz plomo, SP.
Plombagine; Potelot, FR. | Carburette de hierro, "
Reislei potlooth, GER. | Engelsk blyerts, SW.
Piombagine, IT.

Plumbago, a carburet of iron, is used for making leads for pencils and for crucibles. Barrowdale, in Cumberland, was long the only known mine that produced lead of that fine quality requisite for the manufacture of drawing-pencils. The Cumberland mines had been wrought since Queen Elizabeth's time; pure Cumberland lead costing as much as from 30 to 40 shillings a pound, being found in detached pieces, so that the supply was occasionally irregular, and the search for it laborious and often fruitless. Inferior descriptions come from Spain. Veins occur in the hills near Nambrapane in Ceylon. These are largely worked. The best kind of plumbago for crucibles is Ceylon, as it resists the action of fire better than any other substance, except asbestos, and the export has risen from less than 24,000 cwt., valued at £1000, in 1850, to 136,000 cwt., valued at nearly £44,000. Lieut. Evans, 51st Regiment M.N.I., exhibited plumbago of indifferent quality from beds of shale that accompany iron-ore at Malacca. Indifferent plumbago was also exhibited along with iron-ore and slaty shales from Cuddapah. It was found by Captain Boswell, of the 52d Regiment, in the hills of Paparassam, where it occurs in considerable quantities. Darjiling and Burna are also mentioned as localities from which it has been brought; it is found to the east of Nat-taik in large quantities on a low range of hills near the village of Nyokestoke. It is not utilized. Finely powdered graphite can, by an extreme degree of pressure, be rendered nearly as compact as the best mineral graphite. The great manufacturers of pencils in England reported the Kamaon and Travancore specimens as quite useless for the manufacture of black lead pencils, observing that they could not use the specimens in the state in which they had been sent without damaging their machinery, at the same time they could not conceive why purer specimens should not be found in the same locality. General Cullen, Resident of Travancore, reported that two varieties were found, one in thin laminae, another granular. The granular or fibrous variety he had discovered in two localities, and both of them in laterite, a few feet only below the surface. One locality is about 5 or 6 miles N.E. of Trevandrum, and the other about 12 or 14 miles N.E.; he brought in from this latter locality, on his visit to it, about 3 cwt. Some small deposits are also found immediately on the W. of the town of Trevandrum. Graphite in thin scales or laminae is common nearly throughout the laterite tracts of Travancore and Cochin, but more or less abundant in particular places. It is found in some places in laminae of considerable size, particularly in a laterite hill about 25 miles N.E. of Trevandrum at a place called Caviattencudul, near the foot of the Ghat mountains. It is also found in laminae of good size in the disintegrated gneiss of the ghats on the Tinnevely side, also common in the kunkur or travertine deposits near Cudacoorchy and Amba-samudrum. The Vizagapatam graphite is probably also found in laterite, of which there was a large deposit at Bimlipatam. Plumbago mixed with boiled oil, and applied to canvas and other cloths, renders it non-combustible. A powdery plumbago has been obtained from Jammu territory. It was discovered by Dr. W. J. Thornton, Civil Assistant-Surgeon, Gurgaon, in October 1861. It is found in masses of variable sizes, and in general

PLUMBAGO EUROPÆA.

quite detached, though in some cases the rock all round is full of plumbago mixed with finely divided micaceous particles.—*Cat. Ex.*, 1862; *On the Graphite of Kamaon by Dr. Royle*; *Letter from the Resident of Travancore*, 9th February 1857, *Bombay Gazette*; *M. L. S. Journal*; *Rohde's MSS.*; *M. C. C.*; *M. E. J. R.*; *Simmonds*.

PLUMBAGO EUROPÆA.

Chitra vani, . . . SANSK. | Chitra, Shitraj, . . . SANSK.

An erect, branching, smooth, herbaceous shrub. The whole plant, especially the root, is very acrid. The properties of this species and of the *P. scandens* and *P. Zeylanica* are nearly identical. A paste made with rice congee and the bruised bark is applied by the natives of India to buboes in the incipient stages; it acts as a vesicatory.

PLUMBAGO ROSEA. *Linn.* The root, in various forms, is much employed as a poison in India; as an irritant to occasion abortion, and is introduced into the vagina, and applied directly to the neck of the uterus. The bark of the plumbago root of various species, especially the *P. rosea*, rubbed into a paste with water and a little flour or congee, occasions pain in about five minutes, which increases in severity till, in a quarter of an hour, it is equal to that of a cantharides blister or mustard sinapism. If the paste be removed, in half an hour the pain becomes allayed, and in a period of 11 to 18 hours a large uniform blister, full of serum, is occasioned. The blistered surface heals readily without unpleasant ulceration.—*O'Sh.*; *Ainsl.*; *Powell*; *Roxb.*; *Voigt*.

PLUMBAGO ZEYLANICA. *Linn.*

Shituruj, . . .	ARAB.	Tumba kodivali, MALEAL.
Chutra, . . .	BENG.	Kodiveli-chitra
Ken-kyok-phoo,	BURM.	mulum, . . . TAM.
Yen-lai-hung,	CHIN.	Agni mata, . . . TEL.
Chitru mul, . .	DUKH.	Chitra mulum, . .
White-lead wort,	ENG.	Tella chitra mulum, . .
Chitra-chita, . .	HIND.	

The white plumbago is common; so are the other varieties, red and blue, and blossom throughout the year, but the blue is the handsomest; is propagated by layers. The red, the white, and the blue flowered plumbago are common in Tenasserim gardens, and the first two are cultivated by the Burmese for the vesicatory power of their roots.—*Roxb.*; *Riddell*; *Mason*; *Ainslie*.

PLUMIERA ACUMINATA. *Ait., Roxb.*

Gohur-chumpa, . . . DUKH. | Vada ganneru, . . . TEL.
Pagoda tree, . . . ENG.

A small elegant tree, common. A pure white caoutchouc is obtained from this tree. It is abundant and luxuriant in the Pinjore valley, is called by the Burmese, China champac; its straggling and often leafless branches shoot out from their extremities delicate orange-coloured blossoms, tinged with red, and of sweetest fragrance.—*Riddell*; *Royle*; *O'Sh.*; *Mason*.

PLUMIERA ALBA. *Gulachin, DUKH.* The white chumpa. This and *P. rubra*, *Jack*, have been introduced from the West Indies.

PLUTSCHAU, HENRY, a Danish Protestant missionary, who came to India in A.D. 1705, along with Bartholomew Ziegenbald.

POA, a genus of grasses of the natural order Paniceæ. The following are species grown in the south and east of Asia:—

P. Chinensis, *Retz.*, *P. India*, China, bura-pini nuti.
P. cylindrica, *Roxb.*, Canton.
P. cynosuroides, *Retz.*, Egypt, India.
P. diarrhena, *R. and S.*, Bengal.

PODICIPIDÆ.

P. elegantula, *Kth.*, Bengal.
P. Gangetica, *Roxb.*, Bengal.
P. multiflora, *Roxb.*, Bengal.
P. nemoralis, *Linn.*, Europe.
P. nutans, *Kon.*, Bengal, Coromandel.
P. punctata, *Linn.*, Bengal.
P. paniculata, *Roxb.*, Bengal.
P. plumosa, *Retz.*, Bengal.
P. Roxburghiana, *Schultz*, Bengal.
P. tenella, *Linn.*, *P. India*.
P. unioloides, *Retz.*, *P. India*, Bengal, Moluccas.
P. viscosa, *Retz.*, *P. India*, Bengal.

Species of this genus have followed the migrations of man. They mostly contain a sufficient quantity of nutritive matter to render them fodder for various animals. *P. annua* is perhaps the commonest of British plants, springing up on every neglected spot around the habitations of man. *P. pratensis* is known by the name of the smooth-stalked meadow-grass, and is found in most pasture lands. *P. nemoralis*, the wood meadow-grass, is also a common grass in shady places.—*Voigt*.

POA CYNOSUROIDES. *Retz.*

Eragrostis cynosuroides, *R. and S.*
Uniola bipinnata, *Linn.*
Briza bipinnata, *Linn.*

Kusha, Kusa, HIND, SANSK. | Kusa dharbagaddi, TEL.
Pavitra, . . . , | Aswalayana, . . . ,

A plant of Egypt and India, the kusha sacred grass of the Hindus, being sacred to Siva, as are also the pipal, banyan, the neem (*Melia azadirachta*), while the *Ocimum sanctum* or tulsi is sacred to Vishnu and Krishna. Some Hindu legends make Garuda the offspring of Kasyapa and Diti. This dame laid an egg, which it was predicted would produce her a deliverer from some great affliction. After a lapse of five hundred years, Garuda sprang from the egg, flew to the abode of Indra, extinguished the fire that surrounded it, conquered its guards, the devata, and bore off the amrita (ambrosia), which enabled him to liberate his captive mother. A few drops of this immortal beverage falling on the kusa, it became eternally consecrated; and the serpents, greedily licking it up, so lacerated their tongues with the sharp grass, that they have ever since remained forked; but the boon of eternity was ensured to them by their thus partaking of the imperishable fluid. This cause of snakes having forked tongues is still, in the popular tales of India, attributed to the above greediness. At the Ganges bathing-places for pilgrims, the Brahman guides usually present the pilgrim with blades of this grass.

POAY NGHAT, BURM., is used in Burma for caulking boats.

POCHAN, of Dehra Ghazi Khan, a woman's scarf.

POCHARD, the English name of the *Branta rufo*, *Pallus*, the red-crested pochard; *Aythya ferina*, *Linn.*, the red-headed pochard, of the sub-family Fuliginæ.

PODADENIA SAPIDA. *Thw.*

Rottlera Thwaitesii, *Bail.* | *Stylanthus Thwait.*, *Bail.*

A large tree of Ambagawama in Ceylon, and at Marai-Calai, near Ratnapura, at an elevation of 1000 to 2000 feet. The fleshy aril has an agreeable flavour.—*Thw. Zeyl.*

PODICIPIDÆ, the grebe family of birds; *Podiceps cristatus*, the great-crested grebe of Europe, Asia, all Africa, America, Himalaya,

Bengal, Sunderbuns. Perhaps commoner in India than is generally supposed, from its secluded habits, and the great difficulty of procuring specimens.

Podiceps Philippensis or *P. minor*, the little grebe of Europe, Asia and its islands, North Africa; very common in India.

PODOCARPUS, a genus of the yew tribe, large timber trees of the East and West Indies, the Archipelago, South Africa, and South America.

P. polystachya, *R. Br.*, Nepal, Khassya, Malacca, Singapore, China, Japan.

P. elongatus, *P. Heriz*, —?

P. chinensis, *Swt.*, China.

P. cupressina, *R. Br.*, Penang, Java.

P. macrophylla, *Wall.*; *P. maki*, *S. and Z.*, *Chinensis*, *Wall.*, Japan, Amboyna, Nepal, Penang.

P. Koraiana, *Sieb.*, Japan.

P. nageia, *R. Br.*, Japan.

P. Japonica, *Sieb.*, Japan.

P. cuspidata, *Endl.*, Japan.

P. grandifolia, *Endl.*, Japan.

P. spicata, *Brown*, N. Zealand.

P. totara, *Don*, N. Zealand.

P. bracteata, *Bl.*, N. Zealand, Borneo.

P. latifolia, *Wall.*, N. Zealand.

P. nerifolia, *Don*, N. Zealand, Burma.

P. amara, *Blume*, grows on the volcanic mountains of Java, to the height of 200 feet.

P. bracteata, *Blainville*, attains to 80 feet, of Java, up to 3000 feet; also in Borneo, Burma, and Andamans.

P. cupressina, *R. Brown*, is of Java and the Philippines, grows 180 feet high, and furnishes a highly valuable timber.

P. dactyloides, *A. Richard*, of the swampy ground of New Zealand, is the Kahi Katea of the Maoris and the white pine of the colonists. It is a tall, gregarious tree, grows to 150 feet, with a diameter of 4 feet.

P. ferruginea, *Don*, is the Miro, a large timber tree of New Zealand; attains the height of 30 to 40 feet, and 6 to 8 in circumference. Its timber is red and hard, and it yields a dark-red coloured gum-resin.—*G. Bennett*, p. 415.

P. latifolia, *Wall. Pl. As.*, the Neerambali or Nerve tree of the Tamils, is a tall, erect tree of Tounghoo, Khassya, the South Tinnevely mountains, and Courtallum. It was the first conifer detected in Southern India. It is exceedingly ornamental when only a few feet in height, and well worth cultivating; it flowers in August and September, and ripens its fruit in January and February; the tree is abundant on the hills above Calcutta in the dense moist forests, at 3000 to 5000 feet elevation. The timber appears to be very good.—*Beddome, Fl. Sylv.*

P. nerifolia, *Don*, Theetmin, *Burm.*, meaning the prince of trees. These are large trees with stems not very regularly shaped, and found on the higher hills between Sitang and Salwin rivers, and on the range which skirts the coast of the Tenasserim provinces in British Burma. The wood is close-grained, and a cubic foot weighs 50 lbs. The average length of the trunk to the first branch is 20 feet, and average girth measured at 6 feet from the ground is 6 feet.—*Brandis' Cal. Cat. Ex.*, 1862; *Royle's Ill. Him. Bot.* p. 349; *Gamble*.

P. totara is the totara or mahogany pine, the most valuable timber tree of New Zealand. It grows to 80 or 90 feet, with 15 or 20 feet in circumference. Its timber is of a red colour, darkened by age and exposure, excellent in

plank or spar for durability and lightness.—*G. Bennett*, p. 415.

PODOPHYLLUM EMODI. *Wall.* Occurs in Nepal and Kamaon, and on the Chur mountain in the Himalayas, at an elevation of 10,000 feet. *P. hexandrum* was found by Dr. Royle on the Kedarkanta mountain, at an elevation of 12,000 feet. *P. peltatum* is the May apple of the United States, where the root is considered to be a valuable and powerful cathartic.—*O'Sh.* p. 170.

PODOSTEMON. Dr. Wight, in *Icones*, gives of this genus of plants, *P. dichotomus*, *elongatus*, *griseus*, *olivaceus*, *rigidus*, *subulatus*, *Wallichii*, *Wightii*. *P. Wallichii*, *R. Br.*, and *P. Griffithii*, *Wall.*, have been found on the Khassya mountains. One species which grew near the Jaintia Hills on the stones at the bottom of the Oongkot, is a remarkable water-plant resembling a liverwort in its mode of growth. Several species occur at different elevations in the Khassya, and appear only in autumn, when they often carpet the bottom of the streams with green. In spring and summer no traces of them are seen, and it is difficult to conceive what becomes of the seeds in the interval, and how these, which are well known, and have no apparent provision for the purpose, attach themselves to the smooth rocks at the bottom of the torrents. All the kinds flower and ripen their seeds under water, the stamens and pistil being protected by the closed flower from the wet. This genus does not inhabit the Sikkim rivers, probably owing to the great changes of temperature to which these are subject.—*Hooker's Journ.* ii. p. 314; *W. Ic.*

POECILONEURON INDICUM. *Bedd.* Kirbally, *CAN.*, a good-sized tree, common in the ghat forests of South Canara and Malabar up to an elevation of 4000 feet; wood very hard, and used for rice-pounders in South Canara; it flowers in March and April. *P. flata limbata* produces a kind of wax.—*Beddome, Fl. Sylv.*

POEPHAGUS GRUNNIENS, the yak.

POETRY. The poetry of the Hindus is rich, high, and varied, abounding in luxuriant descriptions, and occasionally displaying both grandeur and tenderness; but it is often rendered dull by repetition and bombast, and deformed by an indelicacy unknown to Europeans. *Paradise Regained* says—

‘They loudest sing
The woes of their deities, and their own
In fable, hymn, and song, so personating
Their gods ridiculous, themselves past shame.’

In Hindu poetry, despairing lovers very commonly address objects of nature, clouds, elephants, and birds on the subject of their lost or absent mistresses, as in the *Megha duta*, the 4th Act of the *Vikramorvasi*, and the 9th Act of the *Malati Madhava*. One important cause of distinction between modern European poetry and ancient eastern poetry is, that the latter was not intended for quiet perusal in the cabinet, but for public recitation, as minstrelsy. Hence great attention is paid to classes of letters, and to the flowing of sounds one into the other, without any interval or hiatus between. The most common Sanskrit metre is the stanza of four verses, containing eight syllables. The popular poetry of the Tamil people is of two kinds, viz. that which is intelligible to the ordinary labourer, such as the writings of Siva-vikkyar, and three-fourths of the writings

of Auvaiyar, the Tamil poetess; and the other kind is the classic poetry, such as that of Kamban.

Nearly the whole of Tamil literature, including works on medicine, arithmetic, grammar, and even dictionaries, is in poetry. With the exception of the commentaries on poetical works, prose composition may almost be said to owe its origin to European influence. Only a very imperfect idea of Tamil poetry can be given. In some respects natives alone can fully appreciate its excellence; while, on the other hand, they are blind to some of its defects.

Beschi, in an appendix to his high Tamil grammar, remarks that the Tamil poets use the genuine language of poetry. They rarely mention any object to which they do not couple some ornamental epithet. When they speak of a tree, they describe it either as green, or loaded with flowers, or shady, or majestically large, or as having all these qualities. They never mention a mountain without representing it as rising among woods, or watered by fountains, or decked with flowers. Sometimes they employ this embellishment to excess. They are full of metaphor and allegory. They are at times extravagantly hyperbolic. In the Tamil Naishadam, it is said of Damayanti, the consort of the hero, that when Brahma had created her, her beautiful form had only one rival in the universe, and that was the fair moon. But Brahma, determined that every beauty should centre in Damayanti, took a handful of beauty from off the face of the moon, and threw it into that of Damayanti. The deformity thus made is still apparent in the moon. The Tamil poets delight in similes, as all eastern poets do. They indulge in fiction, and pay little regard to nature. Their Parnassus is Pudiyanmalai, near Cape Comorin. They have neither Apollo nor Mercury. Their Minerva is Saraswati. They invoke Ganapati. Pathos and sweetness rather than vigour are the characteristics of Indian poetry. They are not 'thoughts that breathe and words that burn,' so much as thoughts that please and words that charm. Milk and honey flow, but such milk and honey as to prove an unwholesome diet to some minds.

Dr. Caldwell observes that, 'whilst an elevated thought, a natural expressive description, a pithy, sententious maxim, or a striking comparison, may sometimes be met with, unfortunately elegance of style, or an affected, obscure brevity, has always been preferred to strength and truthfulness, and poetic fire has been quenched in an ocean of conceits. Nothing can exceed the refined elegance and "inked sweetness" of many Telugu and Tamil poems; but a lack of heart and purpose, and a substitution of sound for sense, more or less characterize them all; and hence, whilst an anthology composed of well-selected extracts would please and surprise the English reader, every attempt to translate any Tamil or Telugu poem in extenso into English, has proved to be a failure. To these causes of inferiority must be added a slavery to custom and precedent at least equal to what we meet with in the later Sanskrit. Literature could never flourish where the following distich (contained in the Nannul, or classical Tamil grammar) was accepted as a settled principle:—"On whatsoever subjects, in whatsoever expressions, with whatsoever arrangement, classical writers have written, so to write is denoted propriety of style."

Tukarama, the great Mahratta poet, was originally a corn chandler in a village near Poona, but he became a devotee of the popular deity Vitoba. He died in 1649. His poems are moral and religious. They abound with fine images and noble thoughts, and their author stands high among the poets of India.

The following poetesses have lived at different times and contributed to the Urdu poetical literature:—

Atab Begam, Behar.	Begam, daughter of Nawab
Roshini Jan of Lucknow.	Intizam-ud-Dowla, and
Bhangan of Paniput.	wife of Asaf-ud-Dowla
Begam Jan, daughter of	of Oudh.
Nawab Khair-ud-Din	Begam, daughter of Arnad-
Khan.	ul-Mulk Ghazi-ud-Din
Begam, daughter of Mirza	Khan.
Baber, belonging to the	Mutlilabale of Bareilly.
zanana of Bahadur Shah	Beranija of Delhi.
of Delhi.	Nur Jahan, Mirasin, of
Beni Jan of Benares.	Furkhabad.

The better known of the poets who have written in Hindi and its dialects adopted the following takhallus or poet-names:—

Ajaz.	Insha.	Mahakam.	Razakh.
Asaf.	Josash.	Maruf.	Sheda.
Balhar.	Jurat.	Mastan.	Souda.
Be Dar.	Kalandar.	Mir.	Soz.
Chand.	Kudrat.	Mir Taki.	Suraj.
Dard.	Latif.	Na.	Wali.
Fadvi.	Lutf.	Nazir.	Yakin.
Ihaan.	Maazzaz.	Niaz.	

The following poets have written in Persian:—

Sadi.	Saib.
Jalal-ul-Din.	Mir Mushtaq.
Kamal-ud-Din.	Wazir.
Shah Sharf-ud-Din.	Husain.
Mir Murad Ali Khan.	Wakif.
Jani.	Mirza Qatil.
Hafiz.	Zahid.
Kamal-ud-Din.	Sharf-Boo Ali, Kalandar.
Sharf.	Syed Azim-ud-Din.
Shams-ul-Haq Tabriz.	Rasfi, Sabzi Farosh Shah,
Syed Sabir Ali, Tatwi.	Tatwi.
Be Dil.	Kamal.
Kazim-wala-Isfahani.	Wali Mahomed Taghari.
Fakhri.	Khalig.
Amir Khwaru.	Nasrati.
Nazim.	Mahomed Takki Sabha.
Agah.	Syed Azim-ud-Din.
Jamal-ul-Din Abdur Razaq	Mirza Husain, Wazir, Wafa.
Asaf.	Mir Hotuk, Afghan.
Nizami.	Ghulam Sarwar, Lahori.
Khakani.	Mir Syed Ali Mushtaq,
Mahmud, Ghaznavi.	Tabatabai.
Arselan.	Aqa Mahomed Ashiq, Is-
Maharram.	fahani.
Fack.	Mirza Mahomed Husain,
Roomi Sadiq Mail.	Wafa.
Hissam.	Jalal-ud-Din.
Syed Shah Azim-ud-Din,	Azad.
Tatwi.	Umar Khayyam.

—*Mahabharata*; *Calcutta Review*, No. 109, p. 28; *Balfour's Guldastah-i-Sookh*; *Dravidian Comp. Gram.* p. 89; *Madras L.S.J.*, July 1864; *Rev. H. Bower*.

POGOOL, alias Koondul, TAM., large ear-rings.
POGOSTEMON PATCHOULI. Pellet.

Pogostemon intermedius, Benth.

Pachouli, Patcha pat, BENG. | Kottam, MALBAL, TAM.

A labiate plant used as an ingredient to mix with tobacco for smoking, also for scenting women's hair. It is found in every bazar throughout India. It grows in Sylhet, Penang, and the Malay Peninsula, and seems to grow abundantly in a perfectly wild state at Penang. M. de Hugel found it growing wild near Canton. The odour

of the dried plant is strong and peculiar, and to some persons not agreeable; the dried tops imported into England are a foot or more in length. In Europe it is principally used for perfumery purposes, it being a favourite with the French, who import it largely from Bourbon. They were led to use it because a few years before real Indian shawls bore an extravagant price, and purchasers distinguished them by the odour of patchouli, with which they were perfumed; and on discovering this secret, the French manufacturers got into the way of importing the plant to perfume articles of their own make, and thus palm off home-spun shawls for real Indian. The Arabs use and export it more than any other nation. Their annual pilgrim ships take up an immense quantity of the leaf; they use it principally for stuffing mattresses and pillows, and assert that it is very efficacious in preventing contagion and prolonging life. The characteristic smell of Chinese and Indian ink is owing to an admixture of this plant on its manufacture. Some people put the dry leaves in a muslin bag, and thus use it as is done with lavender, for scenting drawers in which linen is kept; and this is the best way to use it, as its odour, like musk, is most agreeable when very dilute. It requires no sort of preparation, being simply gathered and dried in the sun; too much drying, however, is hurtful, inasmuch as it renders the leaf liable to crumble to dust in packing and stowing on board. By distillation it yields a volatile oil, on which the odour and remarkable properties depend. This oil is in common use in India for imparting the peculiar fragrance to clothes. Among the richer classes of natives in Penang it sold at the rate of a dollar and a quarter to a dollar and a half per pikul. In Bengal, some which was imported from Penang several years previous sold at 11 rupees 8 annas per maund. Later investments have sold at a much lower rate.

POHONTJAT. Jav. A wild tree in Java, which furnishes a beautiful vermilion dye.

POI, in Tahiti, a bowl used as a dish. It is made of kou wood, and has partitions for delicacies, such as dogs, raw fish, shrimps, and herbs.

POILA or **Poliya**, a slave race.—*Wils.*

POINCIANA, a genus of plants of the order Fabaceæ. The following species grow in south and east of Asia:—

- P. aculeata* — ? W. and E. Indies.
- P. elata*, *Linn.*, all Peninsular India.
- P. Gilliesii*, *Hooker*, Chili.
- P. pulcherrima*, *Linn.*, India, Bengal, Moluccas.
- P. regia*, *Bojer*, Madagascar.

POINCIANA ELATA. *Linn.*

Nirangi,	CAN.	Sunciaibla,	TEL.
Pado Narrayan,	TAM.	Sunkewaram,	„
Chitikeswaram,	„		

A very beautiful, middling-sized, very showy tree, abundant in a planted state in avenues, topes, gardens, native cemeteries, etc.; its flowers are large, showy, yellowish, inodorous; the wood is yellow, tolerably close and even grained, easily worked, and gives a smooth surface; warps slightly but never cracks; unseasoned 54 to 58 lbs. per cubic foot, and when seasoned 45 lbs.; sp. gr. .720. It is well suited for cabinet work. It has been successfully used as a protection for the footings of rivers and channel banks. Where it

is not wanted to spread laterally and to cause obstructions, it should be planted in cuttings in December; its grows quickly; its wood might be used for basket bonta. Its leaves are extensively used for manuring indigo fields in Cuddapah.—*Drs. Roxb. ii. p. 355; Cleghorn: Beddome, Fl. Sylv. p. 178.*

POINCIANA REGIA. *Bojer.* The royal poinciana is a gorgeous shrub, introduced from Madagascar into India, bears showy coloured flowers, bright scarlet variegated with yellow. It flourishes well in the Tenasserim Provinces. This tree does not attain a great size, but it is very pretty, and should be planted in mixed avenues.—*M. E. J. R.; Mason; Madras Hort. Garden Cat.*

POINT CALIMERE, a low sandy projection, on which a white pillar has been erected as a beacon, in lat. 10° 17' N., long. 79° 52' 30" E. It is the S.E. extremity of the low drained land, which may be taken for the delta of the river Cauvery. It is thickly planted with cocoanut palms.—*Findlay.*

POINT DE GALLE. The town and fort are built on the point which is rocky and bluff to seaward, with a rocky islet near, called Pigeon Island, surrounded by smaller ones. The entrance of the bay is about a mile wide, and there, as well as inside, the depth of water varies from 2 to 14 feet. It is 70 miles S.E. of Colombo, and is a fortified seaport town, having the only good harbour on the southern coast of the island. It was formerly in the possession of the Dutch, by whom the fort at the entrance of the harbour was built. The light on the S. bastion is in lat. 6° 1' 25" N., and long. 80° 12' 32" E. It was the Kalah of the Arabs, is supposed by Sir J. E. Tennant to be the Tarshish of Scripture. It has been the resort of merchants from the most ancient times, and continues to be a great commercial emporium.—*Findlay.*

POINT DIVI, on the E. coast of the Peninsula of India, is at the N.E. branch of the Kistna delta. Its lighthouse is in lat. 15° 58' 44" N., and long. 81° 9' 21" E.

POINT PALMYRAS, projecting into the Bay of Bengal at Mypurra Island, is in lat. 20° 43' 15" N., and long. 81° 1' 40" E.

POINT PEDRO is the N.E. point of Ceylon. Its custom-house is in lat. 9° 50' 30" N., and long. 80° 15' 10" E. It is a corruption of the Portuguese words *Punta das Pedras* or Rocky Cape. A little town of same name is a mile west of the cape.

Point Pedro Shoal, a dangerous shoal which encompasses the N.E. extremity of the island of Ceylon.—*Findlay.*

POINT ROMANIA, in lat. 1° 21½' N., forms the S.E. extreme of the Malay Peninsula. The circumjacent coast is level land covered with trees. It is fronted by the six Romania islands.

POISON.

Tuh-yoh,	CHIN.	Gift,	GER.
Lau-hway-jin-tih-yoh, „	„	Zahr,	HIND., PERS.
Kwan-yoh,	„	Veleno,	IT.
Poison, Venin,	FR.	Veneno,	SP.

A poison used by suicides in British India is opium mixed with sweet oil. The ordinary plant used to stupefy is the Dhatura. In China, the most common and convenient drug is opium. Mandarins of high rank are said to wear on their persons a small bead, filled with what is called

peacock's blood, which it is said they take when they wish to destroy themselves suddenly. The Bikh poison of the Himalaya is largely used to poison tigers. Dr. Buchanan first acquainted the European world with the existence of four kinds of Bikh, viz. Singya Bikh; Bish or Bikh, the poison; Bikhna, a powerful bitter; and Nirbisi. He referred the first to a species of *Smilax*. The Bish, i.e. the poison, is the root of *Aconitum ferox*. The substances used for poisoning rivers in order to obtain fish, are *Croton tiglium*, *Anamirta cocculus*, *Capsicum frutescens*, and *Kare kai* (Tulu), a species of *Posoqueria*, probably *nutans* or *longispina*. The inhabitants of Mysore and Coorg habitually poison the rivers. From two years' discouragement of poisoning, and one year's discouragement of fine cruises, there were marked advantages.

Poison oak, the Yen-fu-tsze of the Chinese, is the *Rhus semialata*; poison bulb is *Crinum Asiaticum*; poison nut is *Strychnos nux vomica*; and poison turnip, *Clemta virosa*. The expressed juice of the root of *Maranta arundinacea* is stated to be a valuable antidote to some vegetable poisons, and also serviceable in cases of bites or stings of venomous insects or reptiles.—*Royle's Ill.* p. 46; *Sinmonds, Com. Procl.* p. 627.

POITA, SANSKR. from Opa and Veeta, pure. The poita, or jandium, or zonar, is worn as a sacred initiatory cord by Brahmans, by all the Parsee race, by the Kshatriya, the Rajput, and all the Vaisya race of Hindus. The artisans in Southern India are goldsmiths, Komsala; carpenters, Wodla; blacksmiths, Komala; braziers, Komsagara; stone-cutters, Sungtrash. The investiture of a young Brahman with the poita (a contraction of the Sanskrit yagnopavit)—i.e. the sacrificial thread—is analogous to the assumption of the toga virilis of a Roman patrician. The almanac is consulted for an auspicious day. The lad is shaved, washed, and clothed in red. The staff of mendicancy is placed in his hand, and he assumes for a moment the dress and character of a Brahmachari or religious student, at the service of a spiritual guide, as prescribed by Menu. He repeats a sacred text, goes through the form of alms-begging and pretending to renounce the world, and then, at the earnest request of his family, returns to his scholastic or secular pursuits. See Pavitra; Punal.

POIVREA COCCINEA. W. Ic.
Combretum coccineum, Lam. | *C. purpureum*, Vahl.

The scarlet poivrea is the popular favourite amongst the climbing plants in Madras. It requires a trellis not too high; the sooner it gets a procumbent position, the more luxuriant it will grow and flower; easily propagated by cuttings of the young wood in sand under glass. Native of Madagascar.—*Jaffrey*.

POKAR. Several Tamil treatises on medicines, —Pokar Yokamarkkam, Pokar Elamuru, Pokar Tirumantiram, and Pokar Nikandu,—attributed to Pokar, who is said to have lived at a very remote period, but they are spurious.

POKHRAJ. HIND. P. Zafrani and P. Zard are varieties of the tofaz.

POKO NEREI. MALAY. A tree growing amongst mangroves at Singapore, used to prevent diarrhoea.

POKURNA are a singular tribe of Brahmans, of whom it is calculated there were, about A.D.

1820, 1500 to 2000 families in Jeysulmir. They are also numerous in Marwar and Bikanir, and are scattered over the desert and valley of the Indus. They follow agricultural and pastoral pursuits chiefly, having little or no concern in trade. The tradition of their origin is singular: it is said that they were Bildara, and excavated the sacred lake of Poshkur or Pokur, for which act they obtained the favour of the deity and the grade of Brahmans, with the title of Pokurna. Their chief object of emblematic worship, the khodala, a kind of pickaxe used in digging, seems to favour this tradition. See Palliwal.

POL. SANSKR. A gate; eastern or sun gate is Sooruj-pol; Bal-pol, the gate of Bal, the sun-god.

POLA, amongst the Mahrattas, a bull set at large, dedicated to Siva or Vishnu, and stamped with the trident or discus. The Pola festival is held on the new moon of Sravana or Bhadra (July—September), in which bullocks are exempt from labour, are decorated and led through the town in procession.

POLA, in Telugu, means land, whence Polamu, a field.

POLAI, of Singapore, a very remarkable light white wood used to make floats for fishing-nets, and might probably be exported, and used with advantage as a substitute for cork, and some similar substances.

POLANISIA, a genus of plants of the order Capparidaceae. Dr. Wight gives *Polanisia Burt-porensis*, *Chelidonii*, and *icosandra*.

Polanisia Chelidonii, D.C.

(*Cleome Chelidonii*, Linn.)

Of the Peninsula of India, with large rose-coloured flowers; seeds pungent, are powdered and used in curries.

Polanisia felina, D.C.

(*Cleome felina*, Linn.)

| *Aria-vila*, . . MALEAL.

This small plant grows at Courtallum, and is used medicinally.—*Voigt*, p. 75.

Polanisia icosandra, W. and A.

(*Cleome icosandra*, Linn.)

| *Cleome viscosa*, Roxb.

Cleome dodecandra, Linn.

Hurhurya, BENG., HIND.

Kukka vaminta, . . TEL.

Kat kuddaghu, . . MAL.

Nela vaminta, . . "

Naia-veli, . . TAM.

Pedda vaminta, . . "

Nahi kuddaghu, . . "

A plant of both Peninsulas of India, of Bengal, Nepal, Saharunpur. The bruised leaves are used in Cochinchina as a counter-irritant and as a vesicant, in the same way as sinapisms in Europe. The root is used as a vermifuge in the United States of America. The seeds are employed medicinally in India, and sold in the bazars under the name of chori ajan. They yield an oil when subjected to very powerful pressure, which is of a light olive-green colour.—*Eng. Cyc.*; *Mason*.

POLAO. HIND. A savoury dish made of rice and fowl or mutton or beef, with cardamoms, cloves.

POLAYAN, in Malabar, a slave race, both domestic or agrestic. The husband resides with the wife, though with a separate master, and the children inherit the rights of the mother.

POLE, CAPTAIN, an English officer who fell at the taking of the Travancore lines in A.D. 1809, and was buried in a sandy waste 25 miles from the scene of battle. A few years after, the Shanars of the neighbourhood commenced the

worship of his spirit. It consists in offering to his manes spirituous liquors and cheroots.

POLE-CAT, a species of martens. The black-faced pole-cat of Tibet has a tail one-third of the entire length; soles clad, fur long. A specimen obtained in the district of U, in the south of Sanpu, was brought along with a specimen of the Tibetan badger (*Taxidea leucurus*). The length from snout to vent is 14 inches, and the tail is 7 more, so that *M. toufaus* only of Tibet and *M. flavigula* of the Himalaya can compare with it in size.—*Hodgson; Beng. As. Soc. Journ.*, 1849.

POLEEY or **Pallia**. **Guj.** A tombstone raised over a peasant who has fallen in defence of his homestead. See **Pallia**; **Pat'har**.

POLIANTHES TUBEROSA. **W.**

Rujuni-gundha, . . . BENG.	Sandhy-araga, . . . SANSK.
Gool-shaboo, . . . HIND.	Undimandari, . . . TEL.
Andi-malleri, . . . MALEAL.	

The common tuberose. Cultivated in gardens, flower worn by native women in their hair. The natives say its seeds are the white todri of the oriental bazars, which, as also the other todri, Europeans supposed to be from Malacca. The flower has a delightful fragrance, and throws out its odours strongest at evening.—*Roxb. ii. p. 166; Honigb. p. 329; Mason; Powell.*

POLIMERA, a boundary, and in Hindi **Polach** means arable land. **Polimera amma** is the goddess of boundaries.

POLIOÆTUS ICHTHYÆTUS. *Horsf.*

<i>Pandion lineatus</i> , <i>Jerd.</i>	<i>I. lucarius</i> , <i>Hodgs.</i>
<i>Icthyostus bicolor</i> , <i>Gray.</i>	<i>Halietus plumbeus</i> , <i>Hodgs.</i>
<i>I. Horsfieldii</i> , <i>Hodgs.</i>	

Mach-moral, . . . **BENG.** | *Mudhuva*, . . . **HIND.**
The white-tailed sea eagle is rare south of the Nerbadda, but common in Hindustan, Burma, and Malayana. It lives chiefly on fish, but will carry off a teal or wounded duck. *P. humilis*, *Temm.*, a miniature of the last, is found in Malacca and the islands. It is the *I. nanus* of Blyth.

POLISHING SLATE, **Polier Schiefer**, a mineral, occurring massive, with a slaty texture. Its colour is white, yellowish-white, or yellow, brittle, opaque. Specific gravity, 0.59. It is found near Biliu in Bohemia, at Zwickau in Saxony, and Auvergne, and is supposed to be a volcanic product. Its analysis by Bucholz in 100 parts gives—Silica, 83.5; alumina, 4.0; lime, 8.5; oxide of iron, 1.6; water, 9.0. Curatella leaves are employed in Guyana and China for polishing wood, and even metal; and those of *Delima sarmentosa* are employed in Ceylon for the same purpose.—*Royle, Ill. p. 58.*

POLKEE. **TEL.** Several unspecified woods, white, black, and red.

POLLAM. **TAM.** Narrow valleys between the Eastern Ghats.

POLLANARRUA, now a ruined city in Ceylon, was its capital in the middle ages. It was captured and sacked by the Tamil invaders in A.D. 1023, recovered by Wijai Bahu in 1071, but again plundered in A.D. 1204. These ruins are the most extensive and best preserved in Ceylon. There are many gigantic stone figures of Buddha, and the remains of various temples and other buildings. Compared with those at Tissemaha-rama, these ruins are modern, only dating from A.D. 718, and though looked upon as entirely Buddhist remains, both the Delada Malagawa and the Jagta-maha-

rama more nearly resemble the Hindu temples seen in India than other Buddhist temples in Ceylon.—*Frere, Antiquities*, p. 186.

POLL-OCK, a general officer of the Bengal army who conducted operations against Kabul in 1842.

POLLY, **Palle**, **Palli**, **Palleya**, **Pally**, **Pilly**, as in Trichinopoly, Lingampilly, is a Bengali, Hindi, and Dravidian word, meaning a house, a village, a district, a school, a mosque, a church, and generally a place of concourse. It has probably the same origin as the Greek **Poleo**, to frequent, and **Polis**, a city. **Pol** in Sanskrit is a gate. Trichinopoly is said to be from Tri-sira-palli, the town of the three-headed giant.

POLO. **HIND.** A Tibetan game of hockey on horseback. It is the national game of the Bakti race. It is also played by the Dards, and amongst all the people from Leh on the S.E. to high up the Gihit valley on the N.W., and even in the Chitral valley beyond. The writer Joannes, in his History of the reign of the Emperor Manuel Comnenus, shows that polo was played at Constantinople in the middle of the 12th century as a common game.—*Drew, The Northern Barrier.*

POLO, the family name of three travellers into Central Asia and China. In the year 1266, Nicolo and Maffeo Polo, the father and uncle of Marco Polo, were at Constantinople, whither they had gone from Venice with their merchants' wares. Having laid in a store of jewels, they resolved to cross 'the Greater Sea' (Black Sea), on a venture of trade, to Soldaia; and, having stayed there a while, they thought it well to extend their journey farther, and travelled until they came to the court of a certain Tartar prince, Barca Kaan (Barka, a brother of Batou Kkan), whose residences were at Sara and Bolgara. While here a great war broke out between 'Barca and Alau (Barka's cousin, Hulaku Khan), the Lord of the Tartars of the Levant,' and in the end 'Barca, the Lord of the Pont,' was defeated, and so the two brothers Maffeo and Nicolo could not get back to Venice by the way they had come, nor until they had gone 'across the whole longitude of Asia.' Leaving Bolgara they went on to 'Ucaca,' and thence departing, 'and passing the great river Tigris' (Volga), traversed a desert country for 17 days, until they came to 'Bocara' (Bokhara). 'Whilst they were sojourning in that city there came from Alau, Lord of the Levant, envoys on their way to the court of the Great Kaan (Mangu Khan, brother of Hulaku), Lord of all the Tartars in the world.' The two brothers joined the party, and journeyed a whole year until they reached the court of Kablai Khan, who had now succeeded his brother Mangu as Khakhan of the Tartars. Before the death of Mangu Khan, A.D. 1259, it had been intended to remove the seat of the Tartar capital from Karakorum into Cathay or Northern China; but this step, which in the end converted the Tartar Khan into a Chinese emperor, was left to be carried out by Kablai Khan. The two brothers were received with great honour and hospitality by Kablai Khan, and when the time came for them to go back to Europe, he charged them with a letter to the Pope, in which he begged that 100 persons of the Christian faith might be sent to him acquainted with 'the Seven Arts,' able clearly to prove that 'the Law of Christ' was best,—which,

if they did, he declared that he and all under him would become Christians. Kablai Khan also delivered into their hands a golden tablet as a passport, by showing which they were honourably provided with whatever they wanted, whithersoever they went. The two brothers travelled back westward, and after three years came to 'Layas in Hermenia' (L'Ayas or Ayas), a port on the Gulf of Scanderoon, which was then 'one of the chief places for the shipment of Asiatic wares arriving through Tabreez, and was much frequented by vessels of the Italian Republic' (Yule, Marco Polo, note to chap. viii. of Prol). In April 1269 they reached Acre, where, hearing of the death of Clement iv., they returned to Venice, there to await the end of the long papal interregnum by which it was followed. When Gregory x. was at last elected Pope, they at once started on their second journey to the court of Kablai Khan, about November 1271, this time taking young Marco Polo with them. From Acre they proceeded by Ayas and Sivas, and then by Mardin, Mosul, and Baghdad, to Ormuz, at the mouth of the Persian Gulf, hoping to go on to China by sea. This they were not able to do, and so, turning their faces landward, they traversed successively Kirman and Khorasan, Balkh and Badakhshan, and ascended the Upper Oxus to the Pamir plateau, 'a route not known to have been since followed by any European traveller except Benedict Goes (1602-1607), until the spirited expedition of Lieut. John Wood, of the Indian navy, in 1838' (Yule, Marco Polo, Introduction). Crossing the steppe of Pamir, the travellers proceeded by Kashgar, Yarkand, and Khoten, and the vicinity of Lake Lob, through the Gobi desert to Tangut, until at length, some time during the mid-summer of 1275, they arrived at the stately pleasure dome of Kablai Khan in 'Xanadu' (Shangtu). They afterwards proceeded with the Khakhan to his capital, 'Cambalu,' now Peking. They rose rapidly in the great Khan's favour. Marco was entrusted with several missions in different parts of the empire, and in Chiampa or Southern Cochin-China, and the Indian Seas, and Southern India; while to all the hints of the Venetian merchants to be allowed to return home with their gathered wealth, 'the aged emperor growled refusal.' Hulaku, the founder of the Mongol dynasty of Persia ('Lord of the Levant'), was succeeded by his son Abaka, who married a daughter of the Greek emperor Michael Palæologus. His brother Nicolas, who succeeded him, became a Muhammadan, but his son Arghun Khan was hostile to the Muhammadans. He sent embassies (conducted by a Genoese named Buscarelli) to the Pope and the kings of France and England, proposing an alliance against the Saracens and Turks; and in 1290 Edward i. sent Geoffrey de Langley on a return mission to him. Arghun Khan, having lost his favourite wife in 1286, sent to Kablai Khan to select another for him; and about the very time that Geoffrey de Langley's mission was setting out for England, the Polos were commissioned by Kablai Khan to escort the new bride he had chosen for his great nephew from 'far Cathay,' by sea, to the Persian court.

The bridal party sailed from the port of 'Zayton' (Chinchau) in the spring of 1292. They touched at Ceylon, at a port on the Coro-

mandel coast, at Kayal, a port of Tinnevely, the Koil of the present pearl fisheries, and at other ports on the Malabar and Konkan coasts of Western India, at one of which they passed the monsoon of 1293. Marco Polo notices the fine cottons of Coromandel, the abundance of pepper and ginger of Malabar, the incense of Tannah, and the pepper, ginger, indigo, and cotton of Gujerat. Sailing on the close of the monsoon from India, the party reached Ormuz about November 1293, and the Persian camp two months later. Here the fair princess wept as she took leave of the three Polos, who went on to Tabreez, and, after a long halt there, proceeded towards Venice, where they arrived some time in 1295, having been absent from home nearly 24 years. The publication of The Book of Ser Marco Polo became one of the influences which inspired Columbus. It was thought that no great breadth of ocean rolled between Western Europe and Eastern Asia, and, full of this idea, Columbus launched boldly on the Atlantic, convinced that the first shores reached by him would be those of 'Chipangu' (Japan), Cathay, 'Chamba' (Cochin-China), and India. From the time of the Saracen conquest of Egypt, Syria, and Persia, Christians had been forbidden to pass through those countries to the east, and the direct overland trade of Europe with India had entirely ceased. Marco Polo, therefore, was the first after Cosmas Indicopleustes (circa A.D. 535-550) to give a written account of India, and yet we owe its existence to the accident of his having late in life been taken in a sea fight by the Genoese, and thrown into prison, where he was persuaded by a fellow-prisoner to dictate his narrative to relieve the tedium of their captivity.

In Marco Polo's old age, and the years following his death, a remarkable land trade, but temporary, sprang up between China and the trading cities of Italy, of which curious details are given in the book of Pegoletti. The chief imports from the east were the rich satins and damasks of China. European linens were carried for sale on the way; but to China itself, in general, only silver, to purchase goods there. Factories of Genoese merchants were established at Foh-kien. This trade was apparently carried on entirely by Italian merchants travelling to make their own purchases.—*Sir George Birdwood; India Office Records.*

POLYALTHIA CERASOIDES. *Dun, W.A.*

Uvaria cerasoides, *Roxb. Fl. Ind. ii. p. 666.*

Hoom, . . . MAHR. | Chilka dudugu, . . . TEL.

A straight-growing, handsome tree of moderate size, timber whitish and close grained; much used in the Central Provinces and in the Bombay Presidency in carpentry, and for boat masts and small spars. It is common in dry forests near the foot of all the mountains on the western side of the Madras Presidency, in the Salem forests, the Nullamallays, Mysore, Orissa, and the Godavery forests; it flowers in the hot months, and the flowers are fragrant and of a greenish colour.—*Roxb.; Beddome, Fl. Sylv. part i. p. 1.*

POLYALTHIA COFFEOIDES. *Thw.*

Guatteria coffeoides, Hook. et Thom. Fl. Ind. p. 141.

A highly-ornamental tree in Ceylon and in all the moist forests on the western side of the Madras Presidency, from 1000 to about 3500 feet elevation. The Kurumbars make ropes from the bark, which, when fresh, has a strong smell of

ammonia. The tree is in flower at all seasons.—*Beddome, Fl. Sylv.* p. 72.

POLYALTHIA FRAGRANS. *Dalz.* A large tree, common in the moist forests of the Annamallays, 2000 to 3000 feet, in Malabar, on the South Canara Ghats, and Bombay Presidency.—*Beddome, Fl. Sylv.* p. 74.

POLYALTHIA LONGIFOLIA. *Wall.*
Uvaria longifolia, Roxb. | *Unona longifolia, Duval.*
Deodaree, . . . *HIND.* | *Assothee, Ashok,* . . . *TAM.*

This is a very handsome tree, of erect growth, and yielding a good shade. It is extensively planted as an avenue tree at Madras. Timber whitish-yellow, light, and very flexible, tolerably close and even grained; sp. gr. .592. Weight, 37 lbs. per cubic foot seasoned, and used for drum cylinders.—*Beddome, Fl. Sylv.* p. 38.

POLYANDRY. As a rule, throughout the south and east of Asia, woman is monandric, living with one husband, but there have been polyandrists in the same region from the most ancient times till the present day. It has been supposed by some writers that polyandry was peculiar to no division or race of mankind, but was a phase at one stage of the development of every race. It prevailed amongst the Jews and Arabs, among the Spartans within historic times, and among the Celts of Britain in Cæsar's time. As a rule, in India, the population are monandrists and monogamists. But both polygamy and polyandry are met with. From the most ancient times, we read of the existence of forms of polyandry amongst various nations, wide apart the one from the other. It still prevails in modified ways in Tibet, in the Himalaya, amongst some Dravidian races in Southern India, and in Ceylon amongst the indigenes, probably also a Dravidian race. It is said to be followed in parts of Africa, and also in North America. Humboldt found it common in the island of Lancerota, one of the Canaries. Polybius (book iv. chapter iii.) tells us that the Arcadians, in order to smooth and soften their rough and stubborn dispositions, ruled the study of music and dancing, and appointed frequent festivals and sacrifices, which both sexes were obliged to celebrate together, the men with women, and the boys with virgins. Aristotle, followed by Polybius (book xii. ex. ii.), mentions that among the Locrians of Italy all nobility of ancestry was derived from women and not from men. One hundred noble families of the Locrians seem to have migrated into Italy from Asia Minor, along with some of their women, and only the descendants of these women were reputed noble and regarded as descendants of the hundred families. It was from these hundred families that the hundred virgins were taken by lot, as the oracle had commanded, and were sent to Troy. They had amongst them an institution which they had adopted from the people of Italy, amongst whom they were mixed. At the time that they drove the Sicilians out of this part of Italy, the latter had a custom of appointing a young man to lead the procession in their sacrifices, and he was always chosen from the noblest and the most illustrious of their families. But instead of a young man, the Locrians appointed a virgin for the office, because nobility among them was derived from women. The one brother after another succeeding to a widow, among the Jews, alluded to in the question of the Sadducees, may

have the relation to the Asiatic polyandry that a normal state has to an abnormal. Indeed, we read in ancient scripture of the son succeeding to or taking his father's wives, a practice which reached a height in Solomon's time. And Marco Polo tells us that amongst the Mongols, in the time of Kúblai Khan, brothers took deceased brothers' wives, and sons the wives of their fathers, their uterine mother excepted. In the west, Cæsar (lib. v. ch. xiv.) says of the Britons of his time, 'Uxores habent deni duodenique inter se communes, et maxime fratres cum fratribus, et parentes cum liberis. Sed si sunt ex his nati, eorum habentur liberi a quibus primum virgines quæque ductæ sunt.' 'Ten and even twelve have wives common to them, and particularly brothers among brothers and parents among their children; but if there be any issue by these wives, they are reputed to be the children of those by whom respectively each was first espoused when a virgin.' And it may be that the 'bundling' is but a partial continuation of another social custom of the ancient Britons, who often contracted conditional marriages, a practice largely followed by the Swiss at the present day. But Dr. Vaughan, in his *Revolutions in English History* (pp. 97 and 98), questions if Cæsar's knowledge of the Britons was such as to warrant his making that statement. He grounds this scepticism on his belief in the natural instincts of barbarians which operate as powerful safeguards of the chastity of women, and on the fact that among the Britons, according to Pomponius Mela, iii. 2, women were held in high estimation, shared in the honours of priesthood, had the gifts of inspiration, prophecy, and of working miracles, and, like Boadicea and Cartimandua, ruled in failure of male descent. He notices the silence of Diodorus and Strabo as to the custom of polyandry, though both were familiar with what Cæsar had written; and he mentions also his disbelief of the statement of Xiphiline, who attributes the usage imputed to the Britons by Cæsar to the Caledonians in the time of Severus. Dr. Vaughan also disregards the authority of Dion Cassius, who wrote two centuries later, in which a British woman is quoted to say in defence of her countrywomen, that they only did openly with their equals what the Roman women did secretly with their inferiors. The high feelings of the Britons on the purity of their women, he considers established by the fact that it was the wrong done to the chastity of the daughters of Boadicea that filled the cup of indignation among the Britons to overflowing; and the statement of Tacitus, that it was the scandalous proceeding of Cartimandua, in marrying beneath her rank, that helped to produce such disaffection among her subjects as to compel her to fly to the Romans for protection. But when discrediting Cæsar as to the Britons, and Xiphiline as to the Caledonians in the time of Severus, from the disaffection produced by the marriage of Cartimandua beneath her rank, Dr. Vaughan was evidently not aware that the same would result were a Nair woman of the present day to consort with an inferior.

The lending of wives in ancient times in India is repeatedly noticed in the older writings of the Hindus. King Saudasa or Kalmashapada allowed his wife Madayanti to associate with the sage Vashishtha. According to some, this was a

meritorious act on the king's part, and a favour to Vashishtha; according to others, it was to obtain progeny. Similarly, Colonel Yule (Cathay, i. p. lxxxix.) makes mention of the Hazlakhs, who are great gamblers, and stake wife, mother, or daughter on their play. When a caravan of travellers comes into their country, the wife or sister or daughter of some chief comes and washes them. And if any of these ladies takes a fancy for one of the strangers, she carries him home and entertains him with all kindness, and makes her husband or son or brother provide for him in every way; nor as long as the guest is keeping company with her does the husband come near them unless for necessary business. This custom is related by Marco Polo of the people of Kamul. He says of it, 'Il le tienient a grand honneur et n'en ont nulle honte. Car tuit cil de ceste province sont si honni de lever moliers comme vous avez ouy' (Panthier, p. 157); and it is a notorious allegation against the Hazaras of the Hindu Kush, that they carry on the same practice (Wood, p. 201, and Burnes).

The custom here seems of a kind similar to those noticed by Sir R. K. Porter amongst the Kisty tribe in Circassia, and amongst the Torneo in Lapland. Before the khalifs had extended their principles, with their power, over every part of N. Persia, in Atropatia (now restored to its more ancient name of Azerbaijan) women estimated their dignity according to the number of husbands they could boast.

The prevalence of polyandry in the Vedic times is shown in Kashivat saying, 'Aswins, your admirable (horses) bore the car which you had harnessed (first) to the goal, for the sake of honour, and the damsel, who was the prize, came through affection to you and acknowledged your (husbandship) saying, You are my lords.' But polygamy was likewise known, for Kashivat, an illustrious rishi, married ten sisters at once; and this practice continues to the present day amongst Kulin Brahmans; and the last raja of Tanjore, who died in 1855, a Mahratta Kshatriya and descendant of Sivaji's brother, married eighteen young Mahratta women at once.

The fortunes of the five Pandava princes, and the history of their adventures in an archery contest at the court of Drona, is detailed in the epic poem of the Mahabharata. The third of the brothers, Arjuna, was declared victor, and received as his prize the king's daughter, Draupadi, who was equally the wife of his brothers, and possessed five husbands instead of one. When the Pandava were remonstrated with by king Drupada for making his daughter Draupadi their joint wife, Yudishthra, the eldest, according to the Mahabharata, replied to him that Jatila, of the family of Gautama, an excellent woman, had lived with seven saints; and that Varkshi, the daughter of a Muni, resided with ten brothers, all of them called Pracheta, or men whose souls had been purified by penance. These two arguments leave no doubt but that polyandry was then an institution in parts of India. Arjuna and his wife and her other four husbands lived for some years at the fort of Bairath, and the remains of a Gurkha structure on the same site are still visible on a hill near the north-west corner of the Doon. In British India, polyandry continues almost universal in the hill districts attached to the Doon, called the Jounsar

and Bawar pargana. In the Jounsar district, when the eldest brother marries, the woman is equally the wife of his younger brothers, though the offspring are called the children of the eldest brother. When much difference exists in the ages of the brothers of a family, the elder marry a wife, and when the younger grow up they marry another, but the two wives are considered equally the wives of all the brothers. M'Clelland (p. 180) gives a long list of polyandric races, namely, those of Tibet, Kashmir, of the Himalayan regions, the Toda, Coorg, Nair, and other races in India and Ceylon; in New Zealand (Lafitan, i. p. 555) and one or two other Pacific islands, in the Aleutian Archipelago, among the Koryak, the Saporogian Cossack, on the Orinoco, in parts of Africa, and in Lancerota. To these he adds the ancient Britons, some of the Median cantons, the Picts, and the Getes; while traces of the custom occurred among the ancient Germans. To these Sir John Lubbock adds that of some families among the Iroquois.

It has certainly existed from time immemorial in the valley of Kashmir (Vigne, i. p. 37), in Tibet, and in the Siwalik mountains. It is found in Sylhet and Cachar (Jo. As. Soc. Ben. ix. p. 834); among the Coorgs, and on the Neilgherry Hills among the Todas. And it regulates the laws of inheritance amongst races in the southern extreme of the Peninsula of India. In Tibet polyandry continues prevalent. The eldest brother proposes to a girl's parents, and if agreed to, she is brought to her future home, where a three-days' carousal completes the ceremony. In the upper valleys of the Sutlej, in Spiti and Kanawar, are mixed races exhibiting much Tibetan blood, and religion apparently more Buddhist than Hindu. The Tibetan colony at Mahasu, just above Simla, are powerful, ruddy-looking people, entirely unlike Indians. Their women are industrious, but very unattractive. The Tibetan forms an interesting study for the curious in national manners and character. The eldest son has the privilege of choice, but the woman he marries is in common with his brothers. In such a state of society, female chastity is not much valued till the question becomes intermingled with the rights of property. Before marriage, therefore, a woman may associate with men with but little remark; but after she has entered into the fraternal copartnery, they are taken cognisance of by the law.

Turner mentions that the Tibet women in his day, with their three or four husbands, were just as jealous as a Muhammadan polygamist is of his several wives. He saw one woman who had five husbands, all brothers, though the chief, indeed real, husband is the elder brother. Major Cunningham remarks that amongst the Bhoti of Ladakh polyandry is strictly confined to brothers. Each family of brothers has only one wife in common. The most usual number of husbands is two, but three and even four husbands are not uncommon. This system, however, prevails only among the poorer classes, for the rich, as in all eastern countries, generally have two or three wives, according to their circumstances. Polyandry, he adds, is the principal check to the increase of population, and, however revolting it may be to our feelings, it was a politic measure for a poor country, which does not produce

sufficient food for its inhabitants. Every spot of ground within the hills which can be cultivated, has been under the plough for ages; the number of mouths must remain adapted to the number of acres, and the proportion is preserved by limiting each proprietary family to one giver of children. The introduction of Muhammadanism in the west, by enlarging the views of the people and promoting emigration, has tended to modify this rule; and even among the Lamaic Tibetans, any casual influx of wealth, as from trade or other sources, immediately leads to the formation of separate establishments by the several members of a house. Mr. Dunlop, in his *Hunting in the Himalaya* (p. 181), observes that wherever the practice of polyandry exists, there is a striking discrepance in the proportions of the sexes among young children as well as adults. In a village with upwards of 400 boys, there were only 120 girls. He does not suppose that female infanticide prevails or is the cause of the preponderance, as a wife is generally purchased for a large sum from her parents. But in the Garhwal Hills, where polygamy is prevalent, there is a surplus of female children. The polyandry of Ladakh is noticed by Moorcroft (*Trav. ii. pp. 321, 322*), and also in the *Journal of the Asiatic Society of Bengal* for 1844, p. 202, etc.

In Sirmore, three or four or more brothers marry one woman; they are unable to raise the requisite sum individually, and thus club their shares, and buy one common spouse. Women are here articles of property. The custom has a deplorably injurious effect upon the morals of the females in this country, particularly in point of chastity. From the degree of community of intercourse prevailing by custom, the men do not feel shocked at an unlimited extension of it; and the women do not feel shame in a practice from which they are not discouraged by early education. Of a family of four or five brothers, only one or two are in general at home at the same time; some are out on service as soldiers, or with the minor chiefs; others are travelling; the elder usually remains at home. If any quarrel were to arise, a common cause would be made against the offender, and ejectment from house and board ensue. The first-born child is the property of the elder brother, and the next in succession are supplied in turn. The mean number of inhabitants to a house in various parts of Kanawar is six. Polyandry, or a plurality of husbands, prevails also in Chinese Tartary and in the hilly tracts towards the plains. Besides this drawback on the increase of the population, there is another peculiar to Chinese Tartary and the adjoining countries,—that is, celibacy, which is professed by numbers of the inhabitants; and in some villages the monks or lamas and nuns form almost half the population.

Masson, writing of the Sikhs, says it was no unusual arrangement for the many brothers of a family to have a wife in common; and he had known the soldiers of M. Allard request permission to visit their homes, alleging that their brothers had gone on a journey, and their wives were alone. The plea was considered a good one. But such customs must not be imputable to them as Sikhs; they are rather the remains of an ancient and rude state of society prevailing among the Jat race.

Polyandry prevails in Kamaon between the Tons and Jumna about Kalsi, by Rajputs, Brahmans, and Sudras, the brothers of a family all marrying one wife, the children all attributed to the eldest brother. The Padam or Bor Abor in North-Eastern India are polyandrous, and it is not uncommon for an Abor woman to have two husbands, brothers, living under one roof. Among the Miri, a clan of the Abor, two brothers will unite to buy a wife.—*Eth. of Beng. p. 33*.

Polyandry may somewhat explain the comparative indifference with which some races regard the purity of their unmarried women. And this view is supported by the still existing Hindu belief as to the visits of the gods to certain women. This is an ancient notion of the Aryan Hindus, as of the Greeks and Romans, and it is alluded to in the mythological history of the origin of the Pandava heroes, now demi-gods. Descended from the ancient sovereigns of the countries of Hindustan bordering upon the Jumna, called Pandavan raj, or the kingdom of the Pandus, Pandu, son of Vyasa and Pandea, was the reputed father of these five heroes. Their mother's name was Kunti, the sister of a prince of Mathura, who was the father of Heri and Baldeva, the Indian Hercules. Kunti, in consequence of the sins of the ancestors of herself and her husband, was doomed to experience the greatest curse that can befall a Hindu woman, sterility. However, by a charm, she contrived to remove the anathema by enticing the gods to her bed. Thus, says Colonel Tod, she had by Dharmaraja (Yama or the Minos of the Greeks), Yudishthra; by Pavana, Bhima; by Indra, Arjuna; and Nycula and Sydiva by the Aswini Kumara (the Hindu Esculapius, or the sons of Surya), the twins of the Hindu Zodiac (*Cole. Myth. Hind. p. 248*). Over all Kamaon, amongst the richer people, the custom of many brothers having one wife in common has long ceased to be practised, though the widow of an elder brother is commonly remarried to the next brother. This is also a custom with some Jat and Gujar tribes. The Chamar or leather workers of Kanawar, however, like the Bhot, still practise polyandry.

Amongst the Toda and Kurumbar of the Neilgherry mountains, the brothers of a family have usually only one wife between them. She is, moreover, allowed to consort with strangers, without the slightest objection or jealousy on the part of her proper lords.

Polyandry prevails in Travancore, and in the two provinces of the Madras Presidency, called Malabar and Canara, about 300 miles long and 60 broad. Mr. Strange describes it (*Hindu Law, p. 67*) when he says, the inheritance runs in the female, and not in the male line. A man's sons are not in the list of his heirs. His property goes to his sisters, sisters' sons, sisters' daughters, sisters' daughters' sons and daughters, mother, mother's sisters and their children, and to his maternal grandmother, her sisters and their children. Failing these and their stock in the same way of descent, it goes, as in other parts of the Madras Presidency, to the man's disciple and fellow-student, and then escheats. This rule of descent is termed *Marumakatayam*, or *Nepotism* in the female line. The origin of this, he adds, is stated to have been in the time of Parasuramen, the first king of Malabar, who introduced Brahmans

into the district, and gave them possessions therein, and to prevent these properties from being split up, decreed that they should vest in the elder brothers, whom alone he permitted to contract marriage. The sons of these were to be accounted as sons for the whole family. The junior brothers being without wives, are allowed to consort with females of lower classes. The offspring of these unions not being legitimate, could not rank as Brahmans, or inherit from their fathers. Their inheritance was hence made to follow from their mothers. The lower castes fell into the same system of promiscuous intercourse amongst themselves. With them, the females before attaining maturity go through a form of marriage, the bridegroom not necessarily taking the position of husband. After maturity, they may consort with whom they please, and with as many as they please, provided that the connection be with members of their own or some higher caste. The offspring succeed to the estate in the mother's family, it being obvious that parentage cannot be traced out in the line of the male. The castes that follow this rule of Marumakatayam are all, excepting Brahmans and Aka Podwals, a class of pagoda servants, the artisans, viz. carpenters, brass-smiths, blacksmiths, and goldsmiths, and some of the lowest denominations, such as the Cheromars, or slave tribe; with the Malayars and the Panjars, the rule of descent is to sons. The Teeyer or toddy-drawers, and the Mookwa or fishermen of North Malabar, follow Marumakatayam, while those to the south observe Makakatayam, or descent to sons. In North Malabar, most of the Mopla (Mopilla, mother's son), although Muhammadans, follow also the rule of Marumakatayam, in this respect having conformed to Hindu usage in the times of the ascendancy of the Hindus. The adherents to Marumakatayam form united family communities, termed Tarwada. The remotest member is acknowledged as one of the family, if living under subordination to the head of the family and taking part in their religious observances. The senior male of whatever branch is the head of the family, and is termed Karnawen. The other members are termed Anandraver. There is nothing analogous to the state of widowhood as existing elsewhere; females, whether in alliance with males or not, reside in their own families. In theory, the property is held to vest in the females only, the males having right of management and claim to support. Practically, the males are co-sharers with the females. In default of males, females succeed to the management of the family property. In some families the management devolves on them preferably to the males, and in such case the senior female takes it. All members of the family, even the remotest, are entitled to maintenance. On failure of sister's progeny, male and female, the head of the family may make adoption. The descent being in the female line, the adoption must be a female. In view of the probable minority of her offspring at the period when the management may fall in, a male, her brother, may be taken, in adoption, at the same time with herself, in order to afford provision for the administration of the affairs of the family, and for conduct of the religious rites to be observed therein.

Part of the peoples here alluded to as practising

polyandry on the Malabar coast, are called Nairs. Dr. Buchanan, writing regarding their social customs and the results from this practice of polyandry in his time, states that they marry before they are ten years of age, but the husband never afterwards cohabits with his wife. Such a circumstance, indeed, would be considered as very indecent. He allows her oil, clothing, ornaments, and food; but she lives in her mother's house, and after her parents' death, with her brothers, and cohabits with any person that she chooses of an equal or higher rank than her own. If detected associating with any man of low caste, she becomes an out-caste. It is no kind of reflection on a woman's character to say that she has formed the closest intimacy with many persons; on the contrary, the Nair women are proud of reckoning among their favoured lovers many Brahmans, rajas, and other persons of high birth. In consequence of this, no Nair knows his father; every man looks upon his sister's children as his heirs, and it is not easy to see the inducement to the Nair to marry, as he has the burden without any of the enjoyments of wedded life. But this legal or authorized practice must have its check in the social or natural state of man, which, as of most creatures, is one of true monogamy; and proof of this, and yet also of the lateral descent law, is furnished by the account given of the death of a raja of Travancore, who in 1860 died of a decline at the age of 46, after a reign of thirteen years. He had been much affected by the death of a lady of his family, and made a pilgrimage to several shrines, practising great austerities and fastings. His medical attendants (native and European) warned him of the risk in his feeble health, but he persevered, and sank of exhaustion and weakness. He took an affectionate leave of his family, and showed his solicitude for his people by requesting that the custom of shutting the shops for fifteen days when a raja dies, might be dispensed with on this occasion, on account of the dearth and distress from which the people were then suffering. On account of the imbecility of the first nephew,—sister's son,—the second nephew had long been acknowledged as the first prince by the family and the British Government, and then ascended the throne.

The royal family of Travancore seem, however, in 1883 to be recognising their own children; for three daughters of the maharaja Rama Varma were married on the 18th May with great pomp, all the great officers of the State joining in the marriage procession. Behind them came Nair ladies decked with jewels, and wearing jessamine wreaths. Each of these carried in her left hand a silver salver containing rice, a piece of folded silk, a red little box with red powder, and two green balls. Behind these, Tanjore nautch girls. After them came young Nair women dressed in kimkhab, with jewels from head to foot, some in Tanjore fashion, and others in the fashion of the Malayali. After them Nair ladies of Trevandrum, gorgeously dressed, with various kinds of jewels, and with roses and jessamines in their hair. After these were three elephants in a row, richly caparisoned, and with golden head-ornaments, and with howdahs, in each of which was seated the bridegroom, dressed alike in kimkhab, with brilliant ear-rings, gold chains with diamond pendants, and with gold bangles set with precious stones given

by the maharaja to his sons-in-law. The bridegrooms had all of them a sword in their right hand and umbrella-bearers behind. Numerous other elephants then followed.

As this custom is of interest ethnologically, the following description of it is given. Kookel Keloo, Nair, district munsiff in Malabar (Madras Lit. Soc. Jour. No. 48, p. 52, 1859), says the Eeyoover or Teeyer (toddy-drawers) are a section of the servile class of people who, during the time of the Brahmans and Perumals, came to Malabar from Ceylon to earn their livelihood. It cannot, however, be accounted for, how they in many parts, though not throughout the whole of Malabar, came to adopt the beastly custom of the Kummaler of the country, of a single girl being married to three and four brothers; and likewise, in some parts of the country, where this sad custom is not so generally prevalent among them, the practice of taking their deceased brothers' widows for wives as the Musalman Mopilla do. It is only in the taluks of Nidunganad, Kuttanad, Chowghat, and some parts of Vettutnad, and a few adjoining spots in South Malabar alone, that a woman among the Nair is kept at the same time by two or three different men, who are, though, never brothers. It is, though, very possible that the Teeyer may have taken the idea from this latter error, and themselves fallen into the other and more shameful one; or perhaps they observe the custom, as they in general are, as a document in its beginning shows, sprung from the Kummaler or the Kummalers from them, through their then frequent intermarriages. The document calls them also Eeyoovahaiyer, a word equally low and contemptuous in Malabar, and of the same meaning as the word Kummaler. Moreover, amongst the Nair of the whole of North Malabar (that is to say, from part of Coorombranaad as far as Mangalore), though sometimes unchaste practices occur in their families, yet I can, he says, most confidently assert that the above abominable custom of one woman being kept by two or three men at the same time, never in ancient or modern times was once known. A Nair there will, though, occasionally marry two or three women in succession, if the first or second prove barren, or all the children born die, or from any other like cause or domestic difference. Many of the Teeyers also of that part of the country do in some measure follow the custom of the Nairs; but the Teeyettes (Teeyer women) of the remaining Teeyers there are notorious harlots, and become the concubines of strangers of any caste or religion, and this without the least prejudice to their own caste, or any loss of esteem in society; on the other hand, any such act proved against any females of the other castes, subjects the person to excommunication from caste, banishment from society, and all religious advantages. The Teeyer females of South Malabar do not, though, so readily as those of the north, yield themselves to this disgraceful practice. Owing to the very great number of castes, and the peculiar and different manners and customs of various parts of the country, the superficial inquiries of most foreigners have led them into error, and in their works they generally ascribe the same pernicious practices to all castes and parts of the country indiscriminately. However, the Nairs, Teeyers, and indeed all the other numerous castes

of Malabar (including the Cochin and Travancore countries, these being indeed the most striking in this respect), are in some way or other in a greater or less degree of error; and reformation therefore is indeed much needed among them all. It is, though, very lamentable to find them dormant in their original state of depression, and not seeking for reformation rather than growing blindly proud of their vain and different castes and privileges, and ready to run any risk, even that of hazarding their lives, only to preserve their castes.

The Ashary, in Malabar, the carpenter caste, the brassfounder, gold and iron smiths, continue the practice of polyandry, but in civil inheritance follow from father to son. The elder brother marries, and the wife is common to all the brothers. If a junior wish to marry, he must live apart and set up business apart; but if any of his younger brothers reside with him, his wife is common to them. Anandraver is the term applied to the junior members of a Tarwada community living under the law of inheritance called Marumakattayam. (See Karnaven; Tarwada.) In the Madras Journal of Literature and Science for July 1864, a native of the country furnishes a translation of a work entitled the Bhutala Pandya, Aliya Santanada Kattukattale, in which is given the following mythical explanation of the causes which led Bhutala Pandya to frame the Aliya Santana rules. It relates that Deva Pandya, a wealthy merchant of the Pandya country, was sending new ships, richly laden, to a dark island covered with snow, but before launching them, Kundo-dara, a Bhuta raja, or king of the demons, an attendant on Siva, observing that the ships were new, demanded a human sacrifice. Deva consulted with his wife as to sacrificing one of his own seven sons, but the wife fled with them to her native town. On which Deva lay in deep distress, until his sister Satya-vati, hearing of the case, came and offered her own boy, saying to Deva, 'You should not care for this trifling matter. Do you give the boy Jaya Pandya, a son of mine, as a human sacrifice.' But Kundo-dara refused the boy, being aware that Jaya was the son of Vira Pandya, king of that dominion, who had been defeated by Chand Rangada raja, and that Jaya was a Mahapurusha, destined to be a great man; he desired Jaya to assume his, the demon king's name, as Bhutala Pandya, and promised to restore him to the dominions of which Chand Rangada had deprived him. On this, the demon king entered Ujjain, subdued the eight demi-gods, Bhairava, etc., gave Bhutala a throne that Davedra had given to Vikramarka, and entered the town of Jayantika, accompanied by Bhutala. On the demise of the king Siddha Vira Prassiddha Raya, Jaya was elected king. Jaya ruled for six years, during which the Makkala Santana, i.e. the law of inheritance by direct descent of sons, was, for the following reasons, set aside, and that of Aliya Santana, i.e. inheritance on the line of nephews, substituted. The ships of Deva had during a mercantile voyage grounded on the miry bank of an island covered with snow and darkness, and the crew were in great distress, when the demon king appeared and bid them load the ships with the Siddha sile stone (a green stone, husuru sile galu) and Siddha-rasam, and pray to him. This being done, a fair wind brought the ships to the river mouth of Haugara katte at Kalianpur

harbour. King Jaya, on ascertaining that the ships belonged to his uncle Deva, sent for him to receive them, but the demon king again demanded one of Deva's sons as a sacrifice. Deva consulted as to this with his wife, who refused the goods on that condition, and the cargo of stone and liquid was then delivered to king Jaya, who placed both the stone and the liquid in front of the idol Someswara, changing its name to Sidheswara, and erected a temple and image to Kuudo-dara, the demon king, to which he gave the name of Maheswara. On the demon king's recommendation, he framed a code of laws, containing 30 rules, introducing the Aliya Santana rule (the descensus a matre). At this time king Jaya is styled 'master of the throne of king of kings, master of the masters of the four countries called Tulu, Malayala, Haiga, and Karnatica, the first person in the era of Sativahana.' In the sixth year of his reign, the demon king ordered him to bury the green stone (emerald), and shut up the Sudha-rasa well, and the image of Naga set thereon. The castes enumerated in these rules are the

Tulu varu.	Kambararu (pot- fers).	Agasa (washer- men).
Mala varu.	Devadiga.	Halepuika.
Jainaru.	Saliya (weavers).	Mundala.
Nayamma varu.	Mulekudeya.	Karinara.
Maadika.	Panchala.	Holeya.
Haricetti.	Kshauraka (bar- bers).	Audekoraga.
Pari-yaru.		

King Jaya prohibited the Brahmans officiating in death and birth ceremonials; prohibited the Maha-layam or inauspicious ceremony for the deceased; prohibited the giving of the Pancha-gavyam; prohibited the Punya-Homa sacrifice with dubh grass on births and deaths, and permitted only the Nirmalya or remains of idol offerings for the dead, and authorized the continuance of the Puja and Abhi-shekam to the deity for those who brought forth children or died. In the twelfth year of his reign, he invited Jains from the Balaghat, and they built Mangalore and other towns. King Jaya made the Aliya Santana rules applicable to the Kshatriya, the Vaisya, and the Sudras, but permitted Brahmans to continue the rule of direct descent.

The explanation of the above fable seems to be that in the time of king Jaya, all great works, such as shipbuilding, as is still the case in Polynesia, were inaugurated by human sacrifices in propitiation of demons; that a woman of rank twice refused to part with any of her sons for such a purpose, and her husband's sister offered her son Jaya in their stead, but was refused; from which king Jaya declared that descent of property should follow from the sister's side.

Mr. Strange mentions (in literis) that polyandryism in Malabar has prevailed only among those classes whose rule of inheritance is by Nepotism, termed Marumakatayam. It has prevailed in like manner in Travancore, where the same rule of descent is followed. There is, however, a strong tendency in Malabar to throw up the said rule of descent, and to convey property from father to son, and this feeling is owing to the gradual abandonment of polyandryism. The connubial connection which is in question is termed ordinarily, in Malabar, Guna - dosham (Guna, good, Dosham, evil; for better for worse). In Travancore it is styled Mundu-vanga (Mundu, cloth, Vanga, receiving). The girl taken is of ripe

age, and her consent must be obtained. Personal acquaintance thus precedes the formation of the union. The ceremonial consists in the man presenting her with a Mundu, or white muslin cloth. In North Malabar, a small sum of money is tied up in a corner of the cloth. Small presents of money are given to Brahmans. There is an assemblage of friends at the girl's house, and a supper is given either before or after the ceremonial. The hour is about 8 p.m. The girl sometimes is taken to the man's house, but sometimes remains in her own, and is visited by him there. Each party is unrestricted as to the number of such connections that may be formed, but these ordinarily do not exceed two or three. The descent being in the female line, the parentage as to the father was immaterial. Jealousies and quarrels, terminating sometimes in murder, are, however, rare, as might be expected. The connection depends simply upon the will of the parties, and may be broken off by either at pleasure. But the unions in Malabar are now commonly of single couples, the woman living in the man's house strictly as his wife. The classes among whom polyandryism has prevailed in Malabar are the Nair, the Teeyer of North Malabar (those of South Malabar adhering to the descent to sons), and a branch of the slave tribes called Kallady. The term 'Nair' is derived from Naiker, the honorary plural of Naik, which comes from the Sanskrit term 'Nayakah,' meaning a chief man. The four classes of workmen in Malabar, namely, the Ashary (carpenter), Mushaly (brassfounder), Tattan (goldsmith), and Perun-kollan (ironsmith), still follow a peculiar form of polyandryism. This is kept up only in the family. The elder brother marries, and his wife is common to all the other brothers. If a junior wish to marry, he must live apart and set up business apart; but if any of those junior to him should reside with him, his wife is common to them. These classes have descent from father to son.

Kookeloo (Kookel Keloo), a Nair, writing on this subject, mentions that in the Malealanan country, the Ainkudi Kummaler are the five artisan castes,—the Ashary or carpenter, the Mushaly or brazier, the Tattan or goldsmith, the Perun-kollan or blacksmith, and the Tol-kollan or tanner. These five castes follow the custom of marrying one girl among three or four brothers; and this Kummaler custom of three or four brothers marrying one girl, is followed in some parts of Malabar by the Eeyoover, Juver or Teeyer, toddy-drawers, and partially, also, is the custom of the Muhammadan Mopilla, in taking the wife of a deceased brother. The Kummaler and Teeyer are sprung from the same race, and in earlier times intermarried, and this may explain the similarity amongst them of this social practice. It is only in the taluks of Nidungunad, Kuttanad, Chowghat, in some parts of Vettutnad, and a few adjoining spots in South Malabar, that a woman amongst the Nair is kept at the same time by two or three men, who are not brothers. Although the customs of Nair, the Teeyer, and other castes of Malabar, Cochin, and Travancore, particularly by the two latter countries, are thus more or less identical, the practice of polyandry does not seem to have ever prevailed generally amongst the Nair and many of the Teeyer of North Malabar, from Kurumbraunad to Mangalore.

As the result of the Aliya Santana rules, it is stated that, in the present day, the husband during his life gives his personal property to his wife and children, mortgages his permanent property, and on his demise transfers it with the debts to the sisters and their children, so that the territorial possessions have all fallen to Brahmans, Muhammadans, and Christians.

In Canara, a similar system of inheritance obtains to that in Malabar, which is termed Aliya Santana, or nephew inheritance. As in Malabar, the Brahmans do not follow this rule. In its details, the Canara law of Aliya Santana corresponds with that of the Malabar Marumakattayam, saving that the principle that the inheritance vests in the females in preference to the males is in practice better carried out in Canara, where the management of property vests ordinarily in the females, while in Malabar the males commonly administer thereto.

The Aliya Santana of the Tuluva country is similar to the old Italian law of descent, a matrice, a sister's children being considered more surely of a man's own blood than those by his married wife (Coorg Memoirs, p. 30). In the Tuluva country, a Brahman widow can devote herself to the temple, and reside outside or inside its walls. If within, she is a servant of the idol, and receives men of her own caste only. The offspring of such, if boys, are called Moylar; and if girls, are said to be given in marriage to the boys. But if the woman elect to reside outside, she must pay a monthly sum to the pagoda, and may cohabit with any one of pure descent.

The Coorgs continue to have a kind of marriage communism within the family, the wives of the brothers of one house being common property. Children, therefore, are rather children of the family or of the mother, than of the ostensible father. The Coorgs quote, as their authority for this custom, the story of Draupadi. But the state of family life in many Coorg houses, resulting from this custom, is very sad, giving rise to jealousy, mistrust, heart-burnings, quarrels, and often deadly hatred. At present, two or three generations continue to live together in the ancestral home, a large human bee-hive,—the grandfather and grandmother, their sons and daughters-in-law, the children of these families; some houses containing sixty, seventy, eighty souls and upwards; but families are constantly being torn up and separated from the discord that occurs.

Dr. Baikie alludes to a somewhat similar community amongst the Canarese-speaking races to the north. The habits of the Coorgs may vary amongst themselves. Reliable information from another source is to the effect that the first to take to himself a wife is the elder brother. But if she remain unfruitful to him, she passes to the next brother, and only when she fails to have offspring to any brother does she become an out-caste from the family.

Until abolished by the governor, Sir Henry Ward, about A.D. 1860, polyandry prevailed throughout the interior of Ceylon, chiefly amongst the wealthier classes, of whom one woman had frequently three or four husbands, and sometimes as many as seven. The custom was at one time universal throughout the island. Valentyn, ch. vi. p. 95, is quoted for the fact that the king of Kotta, Wijai Bahu VII., who was reigning when

the Portuguese built their first fort at Colombo, had one wife in common with his brother; and Raja Singha I. was born in polyandry; but the influence of the Portuguese and Dutch sufficed to discountenance and extinguish it in the maritime province. As a general rule, the husbands are members of the same family, and most generally brothers. According to the tradition of the Singhalese, the practice originated in the feudal times, when it is alleged their rice lands would have gone to destruction during the long absences enforced on the people by the duty of personal attendance on the king and the higher chiefs, had not some interested party been left to conduct their tillage. Hence the community of property led at length to the community of wives. Sir J. E. Tennant, in A.D. 1848, was informed to the above effect by an aged chief of the Four Korles, Arunpulle Ratemahatmeya, who had lived under three native kings prior to the conquest of Kandy by the British. In more recent times, the custom has been extenuated on the plea that it prevents the subdivision of estates, the children of these promiscuous marriages being the recognised heirs of all the husbands, however numerous, of their mother. But it existed in Ceylon before the conquest of Wijai. In Ceylon no disgrace attaches to such unions, and the offspring are regarded as equally legitimate with those born in wedlock. Within a recent period, about A.D. 1860, a law has been introduced to put a stop to this custom. Sir J. E. Tennant tells us that, in Ceylon, in the province adjoining Bintenne, where the owner's sister's sons inherit in preference to the sons of the owner's wives, the custom is explained by a Singhalese legend to have originated from one of their kings being directed by an oracle to sacrifice a male child of the blood-royal, in order to thwart the malice of a demon who nightly destroyed the bund of a tank in process of construction. But his queen refused to surrender one of her children, on which his sister voluntarily devoted her own boy to death. The king, in honour of her patriotism, declared that nephews were ever after to be entitled to succession in preference to sons. Also, in the western extremity of the province of Ceylon, adjoining that of Bintenne, something like the custom of the races of Western India prevails, and nephews by the sister's side succeed to the inheritance, to the exclusion of the possessor's sons. Singhalese kings frequently married their sisters.

Throughout the interior of Ceylon, among the Kandyan, and them only, polyandry is prevalent, and the wife has the possession of all the brothers, of whom so many as eight have been known. The children call the eldest brother father. A man can bring in another, not a relation, to have joint marital rights with himself; indeed, the first husband can so introduce as many as the wife will consent to receive as husbands. In Kandy, in the Beena marriage, the husband goes to reside in the wife's house, and the woman shares the family inheritance with her brothers. The husband in this marriage can be dismissed summarily by the family of the wife. In the Deega, a more respectable marriage, the wife leaves her own house for that of her husband,—forfeits all her claim on the property of her parents, but acquiring some claim on that of her husband, and the wife cannot obtain divorce

unless with the full consent of the husband. Divorces are constantly sought for by women on trivial pretences. A child born within nine months of the divorce must be maintained by the husband.

North of Ceylon, in British India, the polyandry customs of the Reddi race have already been alluded to. Among the Karakat Vellalar of Madura, adultery with a husband's brother or kinsman is condoned; farther north, among the Nuniya and Ahir, the Levirate law prevails; and with the Gujar and the Jat polyandry customs are permissive. Still farther northwards, in Sirmore, one of the sub-Himalayan Hill States, polyandry is almost universal; in Lahoul, a subdivision of the Kangra district of the Panjab, polyandry is the custom of the people, who are Bhutiyas or Tibetans; and the Kanet, who make up the mass of the population, are of mixed Indian and Mongol origin, the latter element predominating. They are Buddhists, numerous monasteries stud the hills, and they bear a good character. In Spiti, a district of the Kangra division, polyandry no longer prevails; but the same object is attained by their primogeniture custom, by which only the eldest son marries, while the younger sons become monks. Crime is rare, but chastity and sobriety are almost unknown. And in the very south of India, among the Nambari Brahmans of Travancore, the eldest son alone marries and inherits, and they allow their girls to remain unmarried to any age, and even to die unmarried.—*Yule, Cathay*, i. p. 189; *Panthier*, p. 157; *Wood*, p. 201; *Burnes' Tr.*; *Porter's Travels*, i. pp. 143, 144, 340; *Vigne's Kashmir*, i. p. 37, v. p. 13; *Beng. As. Soc. Journ.* ix. p. 834; *Asiatic Researches*, v. p. 13; *Institutes of Menu*; *Cæsar's Commentaries*, book v. chaps. x.—xiv.; *Westminster Review*, April 1868; *Polybius*, book iv. chap. iii., book xii. ex. xii.; *Sirr's Ceylon*; *Humboldt's Travels*; *Dr. Vaughan's Revolutions in English History*, pp. 97, 98; *Cunningham's History of the Sikhs*, p. 18; *Ravenstein's Russians*, p. 391; *Fraser's Himalaya Mountains*, pp. 70, 206, 218, 368; *Moorecroft's Travels*, ii. pp. 321, 322; *Abbe Dumenech*, ii. p. 314; *Lubbock, Origin of Civilisation*; *Tod's Rajasthan*, i. p. 345; *Sir J. E. Tennant's Ceylon*; *Colonel Marcy, Thirty-seven Years' Army Life of the Border*. See Genesis xi. 29, xiv. 14.

POLYGALACEÆ. *Lincll.* The milk-wort tribe of plants, comprising the genera *Polygala*, *Salomonina*, *Xanthophyllum*, and *Securidaca*.

POLYGALA SENEGA, snake root. Several species of *Polygala* were formerly medicinally employed in Nepal and the Himalaya. *P. crocatalarioides* is used as a snake antidote. *P. speciosa* is grown in gardens as an ornamental plant. All the species have handsome, showy flowers, chiefly pink, scarlet, red, or white. The root of *P. tenuifolia*. Yuen-chi, CHINESE, is brought from Shen-si and Ho-nan in cortorted quilled pieces. It is used in cynamche, cough, carbuncle, and its leaves in spermatorrhœa.—*Smith's Chin. Mat. Med.* p. 175; *Riddell*; *O'Sh.*

POLYGAMY. Although polygamy is sanctioned by the laws of the Muhammadan religionists, by the customs of the Chinese, the Cochinchinese, the Siamese, and, in particular circumstances, amongst the Hindus, the people generally are in practice monogamic. Throughout the

Hebrew Scriptures (Genesis xii. 15, xxi.; Esther ii. 3) there are notices of a plurality of wives from the most ancient times, but the Jews were a truly monogamic race, and it was only with Saul and David, followed by Solomon, that numerous wives became usual. Amongst the Muhammadans, the practice from Mahomed's time till now has been to restrict to four wives, and to the haram or war captives, or purchased or household slaves; and in British India the followers of this faith do not deviate from their religious rules, though in general they are monogamic. Opinions greatly differ as to the advantages and disadvantages of polygamy. Though the Christian peoples of Europe are monogamic by law, in practice polygamy, with many resulting crimes and evils, is not unknown. With the Muhammadans and ruling Hindu races who permit and practise polygamy, it is a fertile source of intrigue and disquiet in homes. Colonel Tod, writing of the ruling Rajputs, says polygamy is the fertile source of evil, moral as well as physical, in the east. The desire of each wife that her offspring should wear a crown, is natural; but they do not always wait the course of nature for the attainment of their wishes, and the love of power too often furnishes instruments for any deed, however base. The number of queens is determined only by state necessity and the fancy of the prince. To have them equal in number to the days of the week is not universal; while the number of handmaids is unlimited. It will be conceded that the prince who can govern such a household, and maintain equal rights, when claims to pre-eminence must be perpetually asserted, possesses no little tact. The government of the kingdom is but an amusement compared with such a task, for it is within the Rawla that intrigue is enthroned. Captain Burton, who saw the great polygamic system in the Salt Lake City, observes that the nations of Europe have monogamic laws, have forbidden a plurality of wives, and the consequences are that adulteries and unlawful connections prevail to a most fearful extent; and among some of these nations, sinks of wickedness, wretchedness, and misery are licensed by law. Though polygamy is met with among nearly all the nations of Southern and Eastern Asia, neither amongst the Muhammadans or Hindus is it deemed a respectable practice. A Muhammadan by law can marry four wives, and all his captives in war can form his haram; but no Muhammadan, however rich, no ruling sovereign even, can obtain a second wife from a family of equal social position to his own; and amongst Indian Muhammadans only one wife is married with all the rejoicings and ceremonial display which in most countries are observed when a virgin bride becomes a wife and mistress of a home. In the profligacy of towns, or in the enforced idleness to which so many Muhammadans in India are now constrained, there are in some houses to be found the legitimate number of wives, along with Hindu converts to Muhammadanism, who are styled the *Harm*; and occasionally, amongst the poorer men who have been great travellers, and have married in distant places, more than one wife is in a house. But monogamy is the general rule, and marriage is made with the wife for whom the greater rejoicings are made. In Muhammadan law, all children born in marriage have equal rights. In

India, therefore, where women are married either simply by the Nikkah ceremonial or by the additional display in the Shadi or rejoicing, the Muhammadan law does not recognise any distinction in the rights of the children from Nikkah or Shadi wives. But in the social customs of the Muhammadans of Southern India, a great distinction is made between the offspring in the two marriages. A Nikkah wife never receives the same amount of respect from her household and from relatives, and never receives from her husband an equal monthly allowance to that of a Shadi wife. The Nikkah and Shadi children in their father's households receive equal courtesy from relatives, because they are then alike looked upon as the children of the master of the house. But a father never grants to Nikkah children allowances equal to those which he apportions to those of the Shadi descent. When parents are seeking for suitable marriages for their children, Nikkah offspring are regarded as greatly inferior in social rank to Shadi offspring, and the taint of the Nikkah marriage is remembered by all from generation to generation; and one of the great social injuries from polygamy is that it renders brotherly affection impossible. Among the Mehman sect of Muhammadans, their Pir, or holy men, are of the family called Rashid Shahi (descended from one Muhammad Rashid Shah), or the Rohri-wara Sayyids, remarkable for nothing but excessive polygamy. Rashid, the founder of the house, took unto himself thirty-two wives (instead of four), and justified the practice by the usual sophistical arguments of the Sani order to which he belonged. The Sindi divines pronounced his tenets to be heretical and his conduct damnable. The Mehman sect, however, did not object to it, and still reverence his descendants.

Among Hindus in general it is rare to hear of two wives in one house, but the concubinage of cities is facilitated by the temples possessing Devadassa women devoted to the gods. In Hindu law, a man ought not to take an additional wife save under certain justifying circumstances. These are—his wife's exhibiting want of chastity; habitual disobedience or disrespect towards him; bad temper; bad health; barrenness; or should she for a period of ten years produce only daughters. The consent of the Hindu wife, without any disqualifying causes on her side, also of itself warrants re-marriage. The absence of these justifying causes will not, however, invalidate a second marriage. A wife who has been superseded by a second marriage, whether justifiably or not, should continue to reside with her husband. If he oblige her to leave him, she should reside with his relatives or her own. In either case the husband is bound to maintain her.

It will thus be seen that, by the law, a Hindu may marry as many wives, and by custom keep as many concubines, as he may choose. Sivaji, the last maharaja of Tanjore, married eighteen wives on one day, but this was caused by a mere accident. The raja had sent to his native place for some young women, intending to marry one and give the others in marriage to his nobles; but on their arrival, and becoming aware of his intention, they declared that as they came to marry him, they would do so or not marry at all, but all would at once destroy themselves. In mythological history, it is stated that the ancient

king Dasaratha, the father of Rama, had 60,000 wives.

Notices of polygamy are more frequently met with in the stories of the Hindu gods than seen among the modern Hindus. The majority of the heroes in the writings of Kalidasa are described as polygamists. At present, generally speaking, a Hindu marries only one wife, and after her death another, if he can afford it. In Madras, a city of 400,000 people, there were (in 1860) only three instances in the higher classes of Hindus living with three wives, and these they had married successively on account of the want of children. Concubinage among the higher ranks of Hindu society in Madras is not uncommon, and is generally selections from among the dancing girls of pagodas. In the interior, the petty rajas and zamindars marry two wives, and sometimes keep concubines at the same time. Also the marriage laws of the Hindus who follow the rules of Marumakatayam and Aliya Santana, and the customs of some of the Coorg, Reddi, Canarese, Gujar, and Jat races, lead to polygamy and concubinage; but the Teling, Mahratra, Kurmi, Kumbi, Bengali, and Rajput are monogamic. In Bengal, however, a Brahman race, the Kulins, are regarded by other Brahmans as of the highest social rank, and they eagerly give their daughters to the Kulins, amongst whom are men with many wives. About 1860, the pandit Iswara Chandra Vidya-sagar published a pamphlet in Bengali denouncing polygamy, and gave the names of twelve Kulin Brahmans with forty to eighty wives.

Polygamy is practised both on the mainland and in Torres Straits, and Mr. McGillivray had heard of a man with four wives. According to the will of the father, and without regard to disparity of age, the future husband may be, and often is, an old man with several wives. When the man thinks proper, he takes his wife to live with him without any further ceremony; but before this she has probably associated with the young men,—such, if conducted with a moderate degree of secrecy, not being considered as an offence, although if continued after marriage it would be visited by the husband (if powerful enough) upon both the offending parties with the severest punishment.

The Abbe Em. Domenech tells us that polygamy prevails amongst the Indians of North America.

In the large towns of China and Japan, concubinage seems to prevail to a greater extent than it is met with in the western countries of Southern Asia. In Japan, the practice, so soon as a woman is married, of staining her teeth black, and thus destroying one of woman's greatest ornaments, can only have the effect of making the wife less attractive to the husband, and forcing his affections elsewhere. And in the concubinage of China there is not found among the young women whom they select, any of the deformed feet which the richer classes of the people create for the girls who are to be the wives of their households.

Mr. T. T. Meadows writes strongly on the injurious effects on Chinese women which the right to have many wives occasions. In China the extent to which wives are, by law and custom, in the power of their husbands, would produce deplorable effects, but for the almost unlimited power which law and opinion give mothers over their sons of every rank and age. So also the

institution of polygamy is largely counterbalanced by the desire of all the men to marry early, in order to secure a progeny of sons as soon as possible. The condition of the Chinese woman is most pitiable: suffering, privation, contempt, all kinds of misery and degradation, seize on her in the cradle, and accompany her pitilessly to the tomb. Her very birth is commonly regarded as a humiliation and a disgrace to the family, an evident sign of the malediction of heaven. If she be not immediately suffocated, she is regarded and treated as a creature radically despicable, and scarcely belonging to the human race. Fan-hou-i-pan, celebrated among Chinese writers, though a woman, endeavours in her works to humiliate her own sex, by reminding them continually of the inferior rank they occupy in the creation. 'When a son is born,' she says, 'he sleeps upon a bed; he is clothed with robes, and plays with pearls; every one obeys his princely cries. But when a girl is born she sleeps upon the ground, is merely wrapped up in a cloth, plays with a tile, and is incapable of acting virtuously or viciously. She has nothing to think of but preparing food, making wine, and not vexing her parents.' In ancient times, in China, instead of rejoicing when a child was born, if it happened to be a girl they left it for three whole days on a heap of rags on the ground, and the family did not manifest the slightest interest in so insignificant an event. This public and private servitude of women—a servitude that opinion, legislation, and manners have sealed with their triple seal—has become in some measure the cornerstone of Chinese society. The young girl lives shut up in the house where she was born, occupied exclusively with the cares of housekeeping, treated by everybody, and especially by her brothers, as a menial, from whom they have a right to demand the lowest and most painful services. The amusements and pleasures of her age are quite unknown to her; her whole education consists in knowing how to use her needle; she neither learns to read nor to write; there exists for her neither school nor house of education; she is condemned to vegetate in the most complete and absolute ignorance, and no one ever thinks of or troubles himself about her till the time arrives when she is to be married. Nay, the idea of her nullity is carried so far, that even in this, the most important and decisive event in the life of a woman, she passes for nothing; the consulting her in any way, or informing her of so much as of the name of her husband, would be considered as most superfluous and absurd. In China a woman counts for nothing. The law ignores her existence, or notices her merely to load her with fetters, to complete her servitude, and confirm her legal incapacity. Her husband, or rather her lord and master, can strike her with impunity, starve her, sell her, or, what is worse, let her out for a longer or shorter period, as is a common practice in the province of Che-kiang. Polygamy aggravates the sufferings of the Chinese wife. When she is no longer young, when she has no children or none of the male sex, her husband takes a second wife, of whom she becomes in some measure the servant. The household is then the seat of continual war, full of jealousies, animosities, quarrels, and not unfrequently of battles. When they are alone they

have at least the liberty of weeping in secret over the cureless sorrows of their destiny. The little Chinese girl born in a Christian family is not murdered, as is often the case among the pagans. Religion is there to watch over her at her birth, to take her lovingly in its arms and say, Here is a child created in the image of God, and predestined, like you, to immortality. The Chinese bride is seldom married to her husband until she leaves the parental home, which she is conveyed, with her belongings, to his house. Mandarin ducks are introduced at marriages as patterns of conjugal felicity. In the little feet of the Chinese women the four small toes appear grown into the foot, the great toe left in its natural position. The fore part of the foot is so tightly bound with strong, broad ligatures, that all the growth is forced into height instead of length and breadth, and forms a thick lump at the ankle; the under part measures scarcely 4 inches long and $1\frac{1}{2}$ inches wide. The foot is constantly bound up in white linen or silk, and strong, broad ribbons, and stuck in a very high-heeled shoe. The crippled fair ones trip about with tolerable quickness; to be sure, they waddle like geese, but they manage to get up and down stairs without the help of a stick. Infanticide, of which the husbands are the only perpetrators, is not uncommon; but female children only are murdered, and those immediately after their birth. This horrible crime meets with no punishment from the laws of the country; a father being the sovereign lord of his children, he may extinguish life whenever he perceives, or pretends, that a prolongation of it would only aggravate the sufferings of his offspring.

The one-wife system is confined principally to a few small nations inhabiting Europe, and to those who are of European descent inhabiting America. It is estimated by the most able historians of our day, that about four-fifths of the population of the globe believe and practise, according to their respective laws, the doctrine of a plurality of wives.

Amongst most of the pagan tribes on the north and east of British India, and with several of the hill tribes within the British boundaries, field labour is looked upon by the men as derogatory. It is left to the women; the number of wives, therefore, as of slaves, indicates the extent of their worldly means, and polygamy results. With the Jat and Gujar, the Bhil, Mina, and Mhair, the practice of a brother taking to wife the widow of a deceased brother also occasions the presence in a household of more than one wife. With Hindus, polygamy results from their religion. According to the usual Hindu belief, the future beatitude of a man solely depends upon the funeral obsequies performed and oblations offered to the manes by his putra or son. The primary object of marriage among the Hindus is to obtain a male issue; and it is chiefly in case of failure of a putra or son that the Hindu law sanctions polygamy.

The Muslim husband provides separate apartments and a distinct establishment for each of his wives, unless, as sometimes happens, the one be an old woman and the other a child.

International marriages were very frequent among the different tribes that compose the great family of the Selishes in N. America. After the union, the man generally joined the band to which his wife's family belonged. The custom

arose from the women being the purveyors of the family; they were better able to maintain their household in a locality known to them, and where they could find the nutritive roots on which the tribes chiefly lived. The Indian women's cabins, containing provisions, were completely under their control, and husbands could never touch anything in these without the permission of the mistress of the house. Among the Natchez, the incontinence of the young girls was for them a title of honour, for they made marriage portions for themselves by means of the most unrestrained intercourse, the importance of their matches depending on their greater or less licentiousness. But when once married, they led a most exemplary life, and became models of conjugal fidelity. The reason of this change being that having solemnly given themselves up to their husbands, they had no right to dispose of themselves to any one else. The marriage at length was a purchase, however, the young man saying, 'Here are thy presents with which I buy thee of thy parents.' Polygamy was restricted among the Indian nations of N. America by their poverty, the system of purchase precluding many being bought, but among the rich several wives were married. The Navajos had a regular haram, the last married wife being the mistress of the house; but an Indian generally chose sisters, to have peace.

Colonel Marcy of the United States army mentions that though the custom is now very much abandoned, it was formerly regarded by the Comanche Indians of N. America as an essential part of genuine hospitality, that their guests should have wives assigned to them during their stay in camp. Polygamy was prevalent amongst them, every man having as many wives as he could support. On one occasion, in 1849, when escorting emigrants across to New Mexico, two young girls were brought and offered to him before all the party, but, to the great surprise of the chief Is-sa-kip, they were declined. Among the Moqui Indians of N. America, the young woman selected the young man who suited her fancy, and then her father proposed the match to the youth's father; this proposal was never refused. Polygamy was unknown amongst them.

Throughout the South and East of Asia, women, even as first wives, do not take a favourable position in their households until they become mothers, and the presence of sons of their own, or adopted, is longed for by the childless wife, who often urges her husband to take another spouse.

Polygamy, in China, is encouraged by the law which compels gentlemen and tradesmen to give their slaves in marriage, and by the custom which compels a husband to live apart from his wife during her pregnancy, and while nursing. Wealthy Chinese are generally very careful to follow this custom. It prevails throughout Central Asia, amongst the Muhammadans of Bokhara, Samarcand, and other khanates, and in British India many Muhammadans re-marry when their first wife becomes beyond the child-bearing age. Of all the women in Southern and Eastern Asia, the wives of the races who have adopted Islam hold the highest social position. A Muhammadan woman can legally hold property, is the owner of her own dower, and each wife has a separate establishment and a separate allowance for herself, and separate visit days. This, indeed, is also a

Hindu custom, and is carefully engaged for in the Hindu marriage agreements.—*Sinnell's Lady's Voyage*, p. 50; *Bourring's Siam*, i. p. 106; *Macgillivray's Voyage*, i. p. 8; *P. Vencatroylu Naidu at the Hindu Debating Society*; *Cunningham's Ladakh*, pp. 54, 306; *Rev. H. Moegling's Coorg Memoirs*, p. 29; *Sir W. Jones*, xiii. p. 213; *Lubbock's Orig. of Civil*, p. 100; *Tod's Rajasthan*, i. p. 307; *Burton's City of Saints*, p. 457; *Burton's Mecca*, iii. p. 51; *Strange's Hindu Law*; *Huc's Chinese Empire*, i. p. 248; *Meadows' Chin.* p. 538; *Ben. As. Soc. Jour.*, 1877; *Imp. Gaz.*

POLYGAR, properly Palegara, is derived from the Tamil Paliam, a fort, and Karan, a defender, plural Karar. In Southern India, in the time of Orme, it was a term applied to the semi-independent chiefs in mountainous and woodland districts of the Tamil region. Of these were Aryalore, Bangar Yatcham, Bomraj, Colior-pettah, Elerempuah, Ettapuram, Madura, where their districts lie along the foot of the mountains to the west. Others, in Tinnevely, in that neighbourhood were styled the Tondiman raja, the greater and lesser Maravar; Nattam Nelli Cotah, and Nellitangaville, the last styled Pullitaver. North of Madras were the Polygars of Bangar Yatcham, Damerha, and Bomraj, against whom, in 1756, Muhammad Ali and Colonel Kilpatrick marched. A Polygar possessed the fort of Savanore, one settled at Oodiagherry, and another near Verdachelum, when, in July 1751, Mr. Pigot and Clive drove off another at Warrior-polliam. The most northern Polygar chief was the Dessace of Sawuntwari. Those of Jooneer and Punala were reduced by Sivaji.—*Orme*.

POLYGONACEÆ. *Lindl.* The buckwheat tribe of plants, comprising the genera *Konigia*, *Rumex*, *Oxyria*, *Rheum*, *Coccoloba*, *Ceratogon*, *Ampelgoum*, *Polygonum*, and *Fagopyrum*. *Polygonum linifolium*, as also *P. aviculare* and affinis, grow about Lahore, where they are well known, but little used. *P. macrophyllum* and *P. molle* grow among the Kashmir mountains, where the roots are officinal. *P. Chinense* and *P. barbatum* yield a blue dye like indigo, in China and Japan. Wight gives *P. ambiguum*, *aviculare*, *barbatum*, *Chinense*, *Donii*, *glabrum*, *horridum*, *Indicum*, *molle*, *Nepalense*, *pedunculare*, *strictum*, *Wallichii*; a variety of *P. orientale* is the *Pani* marich of Bengal. *P. tomentosum* is eaten by cattle.

Polygonum, *sp.*
Bijband, Kuwar, HIND. | Kamin, Hunraz, HIND.
Used in N.W. India for spitting of blood and rheumatism. A substitute for rhubarb in double doses.

Polygonum amphibium, *Smith*, smart-wood.
T'ien-liau, Liu, CHIN. | Guree, KASH.
The acrid seeds of this Chinese plant are emetic and stimulant, and are applied to scald head and wounds. The root has been recommended as a substitute for sarsaparilla, which its root-like stems resemble. It vegetates in Kashmir, and is considered as a veterinary medicine; whence its name, guree (horse).

Polygonum aviculare, *Linn.*, knot-grass.
Wei-jui, CHIN. | Machuti, Nisomali, HIND.

A plant of China; its dried root is used as a pectoral. Considered medicinal in Behar and Kashmir. Its numerous seeds supply abundant food for small birds; they are said to be emetic

and cathartic. Thunberg says that in Japan a blue dye is prepared from this plant.

Polygonum barbatum, *Linn.*

Miao-liau, . . . CHIN. | Atalari; Aatalari, . . TAM.
Velutia modela muku, | Konda mallier, . . TEL.
MALEAL.

This plant grows in moist places in Bengal and Peninsular India, and is given in infusion by the native doctors in India in cases of colic. Cattle eat it greedily. The seeds are used in China also in colic and choleraic affections; its leaves and stalks as a wash for callous ulcers.

Polygonum bistortum, —?

Maalun, . . . HIND. | Anjabar, . . . PANJAB.

A plant of the north-west of India. Root very astringent; useful in sore-throat and relaxed gums and ulcers.

Polygonum cymosum, *Wall.*, a wild buckwheat, called pulloph, abundant at Choongtam in Sikkim, forms an excellent spinach; it is a common Himalayan plant, and is also found in the Khasya mountains.

Polygonum fagopyrum, *Willd.*, *Smith.*

Fagopyrum esculentum. | Ugha kaspat, . . . HIND.

Seeds nutritive, contain much oil, said to be very fattening. *P. tataricum* is harder, and ripens more rapidly than *P. fagopyrum*.

Polygonum hydropiper, *Riddell*, *P'en-chuh*, CHIN., a Chinese plant. Juice used as a wash in itching skin affections; as a diuretic, carminative, and anthelmintic. The plant is used as a flux in operating on metals.

Polygonum polystachyum, *Wall.*

Amlsandi, Chuchi, HIND. | Tror, RAVI.

This and *P. polymorphum* are tall plants with fine flowers; one at least of them exhaling a strong honey smell at times. Both appear to be common locally in the Panjab Himalaya, from 6000 to 12,000 feet. The young leaves are used by the natives as a pot-herb, and a very good imitation of rhubarb is got by stewing the stalks, which also, after peeling, are eaten raw by the natives in some places.

Polygonum tortuosum, *Don*, Niala and Nialo, PANJAB. This grows to 15,000 feet in the Himalaya, is said to yield a yellow dye in Lahoul. In Ladakh it is browsed by goats and yaks.—*Eng. Cyc.*; *Hornigb.*; *Hooker's Him. Jour.* ii. p. 31; *O'Sh.*; *Powell*; *Riddell*; *Roxb.*; *Smith, M. M.*; *J. L. Stewart*; *Wight's Ic.*; *Williams' Mid. Kingd.*

POLYNEMUS, a genus of fishes, placed by Cuvier in his third division of the Percide, the general form of the body somewhat resembling that of the perch. They are called paradise fish. The Polynemi yield isinglass, and many of them are valuable for food, and known in India as the sele, king-fish, roe-ball, tapasi matchi. See Isinglass.

POLYNESIA. By modern geographers, Polynesia, in its widest extension, has been understood to include the numerous islands which lie in the Pacific to the east of the Philippines, Moluccas, and Australia, and stretch away to within a few degrees of the west coast of America. So defined, this oceanic region has been ethnographically distributed into Melanesia, Micronesia, and Polynesia proper; but authors differ greatly in their classifications of its races, and the views of Mr. A. R. Wallace and of Mr. Keane will be found under India. Melanesia, or the area of the black or Papuan, i.e. frizzly-haired, population, includes

Papua or New Guinea, and all that continuous insular reach south of the equator, from New Ireland to New Caledonia. Micronesia comprises the Pelew Islands, the Carolines, the Marianne or Ladrone, and the Tarawa or Kingsmill groups. Polynesia proper, extending eastward from Tarawa to Waiho or Easter Isle inclusive, and from Hawaii north to New Zealand south of the equator, comprehends the whole of the intermediate island-world, with the exception perhaps of the Fiji group. Micronesia, or the Pelew-Tarawa region, is covered by the brown race; and Melanesia is the area of the black race; and there is the intermediate and ambiguous Fiji Islands. Among the inhabitants of Polynesia proper of the ethnographical writers, a similarity of race, language, religion, customs, and government sufficiently attest identity of origin. Some ethnologists, indeed, regard it as established, that the Polynesians proper are sprung from the Malay family. This bold and enterprising people, issuing from Sumatra, their primitive settlement, founded Singapur, A.D. 1160, and about a century afterwards, Malacca. The first arrival of Hindus in the Indian Archipelago, if we may trust Javanese annals, occurred about A.D. 1278. The Malay exodus from the same insular region to Polynesia is conjectured to have taken place after the Hindu influence began to prevail there, and before the arrival of the Muhammadan traders and settlers from Arabia. The presence of the black or Papuan element in the various islands of Polynesia is explicable on the hypothesis that the Indian Archipelago and Malay Peninsula were primitively inhabited by a dark race, exterminated or absorbed by a brown race of Indians, connected perhaps with the woolly-haired tribes still known to exist in the mountain range which traverses the eastern side of the Indo-Chinese Peninsula. In support of this, or a not dissimilar hypothesis, Professor Latham refers us to a proximately black variety among the existing populations of Protoonesia, the Malayan Peninsula, and Indian Archipelago, from whose inferior social position and restriction to the interior and more impracticable parts of the island, he concludes that the Protoesian blacks are the descendants of the older occupants. The population of all the islands of the Pacific continental group is presumed to date from Oceanian migration, which has been laid down in the following order,—Malayan, Protoesian, Papuan, Polynesian. When Cook explored the Society Islands, they possessed 1700 war canoes, manned by 68,000 men; but now the total population of the group is said to be only 9000! Yet Mr. Wallace is of opinion that 'Polynesians may be civilised without being exterminated, if they be protected from the rude competition, the vices, and the diseases which free intercourse with the ordinary class of Europeans invariably brings upon them.' Tahiti has not enjoyed that protection, and the result is that the population is fast dwindling. Misguided missionary zeal is charged by Mr. Wallace with having contributed to this result, by forbidding the idyllic festivities of former ages. The consequence is that the fermented juice of the orange has taken the place of the indigenous dances of the past. As Tahiti is French, so the Sandwich Islands are Americanized. According to Mr. Wallace, the effects of the new civilisation have

been dubious in both. He charges part of the result on the missionaries of the Congregational denomination of the United States, for having represented Christianity as 'a severe legal Jewish religion, deprived of its dignity, beauty, tenderness, and amiability.'—*A. R. Wallace*, *ib.* p. 227; *Crawford's Dict.*; *Westminster Review*, April 1862; *Peschel*; *Earl*; *Captain Elphinstone*; *Erskine's Western Pacific*.

POLYPE or **Polyp**, a class of the animal kingdom. The name is from the Greek *πολύπους*, meaning many-footed, and usually comprises the animals of all zoophytes. Some species, like the hydra, float about in the water separately, or are, like the anemone, on rocks; but others secrete a habitation or basis, to which the term polypodium has been applied. These live in masses, formed by an aggregation of individuals. The polypary is the stem or central axis, and it is covered with a skin or membrane, partly gelatinous, partly calcareous. It is the coral of commerce. The more prominent genera are actinia, astrea, caryophyllæa, corallium, hydra, isis, madrepora, meandrina, ocellum, pocillopora, porita, sertularia, tubipora, and others. The polypes that make corals are chiefly *Anthipathes glaberrima*, *Madrepora corymbosa*, *M. pocillifera*, *Gorgonia tuberculata*, two species of *Astrea*, *Leiopathes glaberrima*, and *L. Lamarckii*. The *Corallium nobilis*, dredged in the Mediterranean, yields the red coral which, after pearls, is for ornamental jewellery the most precious product of the sea. Sicilian coral has fetched £10, 10s. the ounce. *Tubipora musica* has bright red calcareous tubes. It is used for ornament. The brain coral is called *Meandrina*. The walls formed by polypi are always perpendicular. The madrepora abound near the islands of the Indian and Pacific Oceans, and cover the banks and reefs near the shores, particularly *M. muricata*, *Linn.* When still alive in the sea, the rough surface is seen dotted with red spots, which are the polype or coral insects, and a minute examination detects thousands of them, each inhabiting permanently a little cell of its own. Many of the polype or coral insects have a little parasol-shaped cover for the head; the arms are furnished with eight claws, are long compared with the body, and are generally seen extended as if reaching for food. Some of the kinds of coral resemble gigantic plants with flowers and leaves. Some grow like a tree with leafless branches, and others spread out fan-like into broad flat surfaces. Those which build the coral reefs are not tidal animals, and require to be constantly submerged or washed by the breakers. Exposure to the sun's rays for a very short time invariably causes their destruction.—*Darwin*.

POLYPODIUM, a genus of ferns of the order Polypodiaceæ. The prominent species are:—

- P. excavatum*, *Rozb.*, Moluccas.
- P. giganteum*, Tenasserim.
- P. glabrum*, *Rozb.*, Bengal.
- P. Horsfieldii*, *R. Br.*, Penang.
- P. lucidum*, *Rozb.*, Nepal.
- P. mucronatum*, *Rozb.*, Sylhet.
- P. pertusum*, *Rozb.*, Sunderbuns, Tenasserim.
- P. phyllitidis*, *Linn.*, Chittagong.
- P. proliferum*, *Rozb.*, Nepal, Bengal.
- P. quercifolium*, *L.*, Bengal, Moluccas.
- P. semisagittatum*, *Rozb.*, Sunderbuns.
- P. sopheroides*, *Rozb.*, Moluccas.
- P. tenerum*, *Rozb.*, Sylhet.
- P. tridactylum*, *Wall.*, Khasya.
- P. Wallichii*, *R. Br.*, —?

A large terrestrial reed fern, with hollow stems like a reed, is often used by the natives of Tenasserim instead of quills for pens. In Calcutta, the Hindus boil the young tops of a polypodium with their shrimp curries. Hindu and Muhammadan medical men use several of the ferns in their practice.—*Hooker*, *l.* p. 50; *Mason*.

POLYPORUS, a genus of fungi causing dry rot. Some grow to a very large size, *P. fomentarius*, on poplars near Iskard, exceeding in dimensions anything which this species exhibits in Europe.

P. anthelminticus.

Thau mo, Wa-mo, *Burm.* | *Chu-tan*, . . . *CHIN.*

Grows in China on bamboo. It is about the size of a pullet's egg; it is used as an anthelmintic.

P. ignarius, Chi. Ling-chi-ts'au, *CHIN.* Many sorts of fungi having some degree of luminosity in the dark, occur in China.—*Smith*, p. 175.

POLYRACHIS, a curious genus of ants in the eastern forests, armed with hooks, spines, points, and bristles. See *Ants*.

POLYSPORA ANELLARIS is very highly prized by the Chinese. It grows in the same situations with the *Endemithus reticulatus*, flowers in February and March, about the time of their new year, and they bring the branches down from the hills in great quantities for the decoration of their houses.—*Boissier*.

POMACENTRIDÆ, one of the grandest fish among the coral fishes, are the *Chetodon*, the *Balistæ*, and the *Glyphodon*. A *Pomacentrus* is of the richest sapphire blue; the *Glyphosodon* and *Therapon* are striped and banded.—*Codd*.

POMAIL, in Tumor Island, a form of the taboo.

POMEGRANATE, *Punica granatum*.

<i>Rana ruman</i> , . . .	ARAB.	<i>Rumias</i> , . . .	PORT.
<i>Ngan-shih lin</i> , . . .	CHIN.	<i>Delunghidie</i> , . . .	SINGH.
<i>Rimnon</i> , . . .	HEB.	<i>Granadas</i> , . . .	SP.
<i>Ansar, Darim</i> , . . .	HIND.	<i>Madalum</i> , . . .	TAM.
<i>Gangsalan</i> , . . .	JAV.	<i>Dadima</i> , . . .	TEL.
<i>Dalima</i> , . . .	MALAY.	<i>Nai</i> , . . .	PERK.
<i>Ansar</i> , . . .	PERK.		

This shrub is common in the warmer parts of the temperate zone. Pomegranates when ripe are about the size of an orange, are covered with a hard, light-brown rind, and contain a reddish, seedy, juicy pulp. Dried pomegranates are said to be used for dyeing yellow; the rind is also a tanning substance. The pomegranate is grown throughout Southern Asia. In Kaudahar, the fruit grows of large size, beautiful red colour, and of great lusciousness. There are six or seven sorts; those of Jalahabad are famous, the husk of the fruit is very acrid, and is used in dyeing, and in medicine an astringent; the root-bark has similar properties. Pomegranate peel, *Shih-lui-pi*, *CHIN.*, is used in China as an astringent. Pomegranate seeds, *Anardana*, *HIND.*, used in India medicinally. The root is an excellent vermifuge. The bark has been used in dyeing, and it is this which gives the colour to yellow morocco leather.

POMFRET, *Stromateus argenteus*.

Hulva mahi, . . . *DUKH.* | *Vowal meen*, . . . *TAM.*

The pomfret fish is much valued by Europeans in India. *S. argenteus*, *Block*, the Madras white pomfret, is in abundance, and in excellence it vies with *S. Sinensis*. *S. niger*, the black pomfret, is taken abundantly along the coasts of India, and is largely dried for export to the interior. *S.*

Sinensis is par excellence the white pomfret of the Straits Settlements and Madras, and 'pample blanche' of Pondicherry. It is justly renowned for its flavour, but it requires to be used when freshly taken. In the Straits and on the Coromandel coast it is abundant at all seasons. At the Sandheads in the Bay of Bengal (lat. 21° N.) it occurs, but less numerously. Dr. Russell considered it very inferior to the black or *S. niger*, Bloch. It is very abundant on the Tavoy coast, and in a smooth sea may be seen deep in the water in great numbers, but they are very shy of the hook.—*Russell*, p. 34; *Mason*; *Ains. Mat. Med.*

POMFRET, BULL'S EYE, *Holocentrus ruber*, is eaten in Ceylon.

POMPONIUS MELA, who wrote *De Situ Orbis*, states that in the farthest east of Asia are the Indians, Seres, and Scythians. The Indians and Scythians occupy the two extremities, the Seres are in the middle.—*Yule, Cathay*, ii. p. 153.

PON. TAM. Gold, also a sum of money; and it is used in the sense of a pagoda. It may be the source of the term Hun.

PONAM. MALEAL. High land overrun with underwood.

PONANY, a river in Coimbatore, lat. 10° 19' N.W., long. 77° 6' W., flows into the Indian Ocean; length, 128 miles. Navigable for canoes as far as Palghat, 63 miles from the sea.

PONDICHERRY, on the Coromandel coast, the chief town of the French possessions in India, and residence of the Governor-General, is in lat. 11° 55' 57" N., long. 79° 52' 33" E.; population, 156,094. Pondicherry was founded by Martin in 1674, and afterwards became the seat of the French Government in India. It was taken by the Dutch in 1693, but it was restored at the peace of Ryswick. In 1748 the British besieged, and on 14th January 1760 Colonel Coote took it, to be restored in 1763. The British took it again, and restored it in 1783; again captured it in 1778, to be restored 1785; recaptured 1793, and restored 1816. It is surrounded by the Cuddalore taluk of South Arcot district, Madras. Pondicherry consists of three districts; that of Pondicherry is composed of the town and eleven villages, that of Villanur having forty-five villages, and that of Bahur thirty-six. The most important streams that run through the territory of Pondicherry are Ginji, which is fed by the Arincoum and the Chonnambar rivers, and the other is the Ponnear.

PONDIGUL SLATE, a black monumental marble, procurable in any quantity at Pondigul.

PONERIDÆ. *Smith*. A family of ants of the order Hymenoptera, comprising the genera—

<i>odontomachus</i> , <i>Latr.</i>	<i>pseudomyrma</i> , <i>Gure.</i>
<i>typhlopode</i> , <i>Westw.</i>	<i>atta</i> , <i>St. Farg.</i>
<i>myrmica</i> , <i>Latr.</i>	<i>pheidole</i> , <i>Westw.</i>
<i>ponera</i> , <i>Latr.</i>	<i>meranoplus</i> , <i>Smith.</i>
<i>crematogaster</i> , <i>Land.</i>	<i>cataulacus</i> , <i>Smith.</i>

In the genus *Ponera* the neuters and females are armed with a sting. Dr. Jerdon mentions *P. affinis*, *processionalis*, *pumila*, *rufipes*, *sculpta*, *stenochellos*.

P. processionalis lives in the ground in very numerous societies; frequent in jungly districts. Occasionally a vast column of them, three or four deep, may be seen crossing a road, and the column can be traced for 40 and 50 yards. It stings very severely.

P. sculpta is the commonest ant in Malabar, from

the level of the sea up to the top of the Neilgherries. It lives in the ground in small societies, often making its nest in a flower-pot, occasionally under a large stone. It does not work in concert, being generally seen solitary. It lives on animal substances, but apparently will also take vegetable matter, and fight for a ripe seed of the *Lantana*.

PONG, a once powerful dynasty of the Tai race, finally overthrown by Alompra in the middle of the 18th century. See Tai.

PONGAMIA, a genus of plants, mostly trees, of the order Leguminosæ, section Dalbergiæ. The following East Indian species are known:—

<i>P. glabra</i> , <i>Vent.</i> , British India, Burma.
<i>P. marginata</i> , <i>Grah.</i> , Khasya.
<i>P. uliginosa</i> , <i>D.C.</i> , Pen. India, Pen. Malacca, Bengal.
<i>P. sericea</i> , <i>Vent.</i> , Java.
<i>P. heterocarpa</i> , <i>Wall.</i> , Burma.
<i>P. atropurpurea</i> , <i>Wall.</i> , Burma.
<i>P. ovalifolia</i> , <i>W. and A.</i> , Peninsula of India.
<i>P. elliptica</i> , <i>Wight's Ic.</i>

PONGAMIA ATROPURPUREA. *Wall.* This is a very large tree, very common about Moulmein, abundant in the Tenasserim provinces, and though vastly inferior to a multitude of others, Wallich thought it of sufficient beauty to give it a place among his splendid engravings of rare Indian plants. Flower a beautiful purple. — *Mason*; *Malcolm's Tr.*

PONGAMIA GLABRA. *Vent.*

Galedupa Indica, *Roeb.*

Tha-wen, BUAN.	Sook-chain, PANJ.
Kanuga, Kongay, CAN.	Mogul karanda, SINGH.
Karanj, HIND.	Pongam, TAM.
Papree, Paphri, KANAON.	Kanuga, TEL.
Rara, KANGRA.	

This graceful tree grows all over India, attaining a height of 40 to 50 feet, and has beautifully varnished green leaves all the year round. It is excellent for avenues. The boughs and leaves are extensively used as a strong manure, for sugarcane especially. The wood is light, tough, and fibrous, coarse and even grained, of light yellowish-brown colour, not easily worked, nor giving a smooth surface; it is improved in strength and colour by being seasoned in water; a cubic foot unseasoned weighs 48 to 55 lbs., and 40 lbs. when seasoned; sp. gr. .640. It is used for a variety of purposes, and the solid wheels of the Waddars' carts are often made of it. The bitter oil from the seeds is much used on the Bombay side in the manufacture of native felt, and has great curative powers in itch and mange. It solidifies at 55°, is of a pale brownish colour, has a slight smell, which becomes more evident in the darker coloured samples. It is used for burning in native lamps, and in large quantities for boiling with dammer to soften it for the seams and bottoms of ships. A maund of seeds costs 1½ rupees, and the extraction of the oil by heat costs 8 annas. The oil produced amounts to 6½ seers per maund.—*Wight*; *Voigt*; *Gibson*; *Cleghorn*; *Beddome*, p. 23; *M. E. J. R.*; *Mr. Thomson*; *Powell*; *Gamble*.

PONGOL, the first day of the Tamil year, a Tamil festival, about the 11th January, when the sun enters Capricorn, and is the greatest of the unsectarian festivals of the Hindus. The Pongol is nothing else but the pagan feast for the birth of Mithras. The last presents the allegory of the regeneration of the sun, and that of Pongol is for the return of this planet. The renewal of the

solar year has been always celebrated with great solemnity among all nations. It is the Sankranti or Maha Sankranti of other Hindus. The festivity lasts three days, during which the Hindus employ themselves somewhat in the same manner as the Europeans do on the first day of the year. To the Hindus the feast of the Pongol is a season of rejoicing, for two special reasons. The first is, that the month of Magha, i.e. December—January, every day in which is unlucky, is now over; and the other, that it is succeeded by a month, each day of which is lucky. For the purpose of averting the evil effect of the baleful month of Magha, about four o'clock in the morning the Sanyasi ascetics go from door to door of every house, beating on a plate of iron or copper, which produces a piercing sound. All who sleep, being thus roused, are counselled to take wise precautions, and to guard against the evil presages of the month, by expiatory offerings and sacrifices to Siva, who presides over it. With this view, early morning, the women scour a space of about 2 feet square before the door of the house, upon which they draw several white lines with flowers, and upon these they place several little balls of cow-dung, sticking in each a citron blossom. These little balls are probably designed to represent Vighneswara, the remover of obstacles, whom they desire to propitiate with the flowers. Each day these little lumps of cow-dung, with their flowers, are picked up and preserved in a private place, till the last day of the month Magha; and when that comes, the women, who are alone charged with this ceremony, put the whole in a basket, and march from the house, with musical instruments before them, clapping their hands, till they reach some waste place, where they dispose of the relics. Then, with the first day of the new month begins the festival, the first day of which is called the Bhogi Pongol, i.e. Indra's Pongol, and it is kept by inviting the near relations to an entertainment, which passes off with hilarity and mirth. The second day is called Surya Pongol, i.e. Pongol of the sun, because it is set apart in honour of the sun. Married women, after purifying themselves by bathing, which they perform by plunging into the water without taking off their clothes, and coming out all wet, set about boiling rice with milk in the open air, and when it begins to simmer, they make a loud cry, all at once repeating the words Pongol! Pongol! it boils! it boils! The vessel is then lifted off the fire, and set before the idol Vighneswara, which is placed close by, and, after having been offered to the image, part of the rice is given to the cow, and the remainder distributed among the people. This is the great day of visits among the Hindus. The salutation begins with the question, 'Has the milk boiled?' to which the answer is, 'It has boiled;' and from this the festival takes its name Pongol, i.e. boiling. The third day is called the Madu Pongol of cows. On it they mix, in a great vessel filled with water, some saffron, cotton seeds, and leaves of the margosa tree; and then, going several times round all the cows and oxen belonging to the house, they sprinkle them with the water, as they turn to the four cardinal points; and make the Haast-anga, or prostration of the eight members, before them four times. This ceremony is performed by the men only. Next, the cows are all dressed out, their horns being

painted with various colours, and garlands of flowers and foliage put round their necks and over their backs. They likewise add strings of cocoanuts and other fruits, which are soon shaken off by the brisk motion of the animals which these trappings occasion, and are picked up by children and others, who follow the cattle on purpose, and eagerly eat what they gather, as something sacred. The cattle then, being driven in herds through the villages, and made to scamper about from side to side by the jarring noise of many sounding instruments, are during the remainder of the day allowed to feed at large without a keeper, and whatever trespass they commit is suffered to pass without notice or restraint. At the conclusion of the festival, they take the idols from the temples, and carry them in pomp to the place where the cattle have been collected. The Deva-dasa singing girls of the temple are also present. On the eve of the celebration of the festival, houses are cleaned, broken roofs are repaired, the rude external decorations of the walls are painted afresh, and the sacred signs of the Vaishnava are carefully picked out above the threshold. The potter plies his wheel incessantly, for every Hindu house must be furnished with new utensils. The rice-man is busy with cadjan and style, buying up new grain from needy cultivators, for in every house new rice only may be used. Parents who during the past year have given a daughter in marriage, and seen her settled in her new house, send her large quantities of grain, fruits, and household stuffs; that the Pongol may be kept without touching the small capital of the young couple.—Garrett. See Pola.

PONNI-AMMAN, a local goddess, worshipped at Madras for protection against cholera. In Tamil the name means golden mother.

PONTERACEÆ, a natural order of plants, natives exclusively of North and South America, the East Indies, and tropical Africa. Some of the species of Pontedera are employed by Indian practitioners in liver complaints and diseases of the stomach. Rubbed down in butter and drank, they are said to remove redness of the eyes; powdered and mixed with sugar, to relieve asthma; and when chewed, to remove toothache; brayed with milk, some are administered in fever and some eaten as pot herbs. Roxburgh describes *P. dilatata*, *hastata*, *plantaginea*, *sagittata*, and *vaginalis*.—Roxb.

POOAH or Poe is the Kienki fibre of the Lepchi, and the Yenki of the Limboo. It is the *Urtica frutescens*, *Thunberg*; grows in Nepal to the height of 6 or 8 feet. Its fibre, when properly dressed, is quite equal to the best flax of Europe, being used for fishing-nets, game-bags, twine, and ropes; is considered well adapted for making cloth and canvas, has great strength, and endures wet well. It is cultivated, but grows wild and abundantly in the valleys throughout the mountains of Eastern Nepal and Sikkim, at the foot of the hills striking the Terai, to the elevation of 1000 to 1200 feet, and within the mountains up to 8000 feet. It does not grow in the forest, but is chiefly found in open clear places, and in some situations overruns the abandoned fields of the hill people, within the elevations which suit it. It sheds its leaves in the winter, throws them out in April and May, and flowers and seeds in August and

September, the exact period altering of necessity with the elevation. D. Don described from Nepal, *Boehmeria frondosa*, *macrophylla*, *platyphylla*, and *ternifolia*; also *B. salicifolia*, from the Himalaya and Moluccas. *B. interrupta*, Willde., is the *lal bichit* of Bengal, and *B. Hamiltoniana*, Malabarica, *nivea*, *rugulosa*, and *Travancorica* occur.—*Voigt; Royle*, p. 368. See *Boehmeria*; *Fibrous Plants*.

POOD or Poot, a Russian weight = 35½ lbs.

POOEY or Pway. BURM. A theatrical performance. It has a full orchestra, the *patsahaing* or drum harmonicon, a circular tub-like frame about 30 inches high and 4½ feet in diameter, and with 18 or 20 drums fastened around it. The Burmese amusements are boat and horse races, the *poocy drama*, music, cock-fighting, gambling, boxing, football.

POON, Puhn, or Peon, a commercial term, derived from the Malay language, but applied by natives of India and Europeans to the timber of several distinct trees used for masts and spars. Dr. Roxburgh says, *Calophyllum angustifolium*, a native of Penang and of countries eastward of the Bay of Bengal, yields the straight spars commonly called Poon, which in those countries are used for the masts of ships, and Drs. Gibson and Cleghorn were also of this opinion. It occurs in Penang, Coorg, Mysore, Canara, and along the ghats northwards to Sawuntwari, but rarely of any great size beyond the line of the Nilcoond ghat. It is a magnificent tree when growing in the ravines of the southern ghats of Canara. In habit and appearance, Dr. Gibson says, it is totally distinct from *C. inophyllum*. At the Madras Exhibition of 1855, Dr. Cleghorn in the Jury Reports, noticing *Sterculia foetida* as a large tree in Mysore and the western coast of the Peninsula, adds that it is one of the trees believed to furnish the smaller poon spars, and Major Drury, in *Useful Plants*, repeats this. *Calophyllum inophyllum* grows in the western parts of Ceylon, where it is employed for the masts and cross sticks of Yettia dhonies and fishing-boats and poles of bullock carts. A cubic foot of it, there, weighs 40 lbs. In the alpine forests it attains a great size, and furnishes the poon spars so valuable for shipping. The weight of a cubic foot of the following poon trees is stated as under:—

<i>Calophyllum inophyllum</i> , 26-45 lbs.	<i>C. tomentosum</i> , 32-38 lbs.
<i>C. polyanthum</i> , 38-44 "	<i>C. Wightianum</i> , . 45 "
<i>C. spectabile</i> , .38-39 "	<i>Dillenia pentagyna</i> , 45-70, "
	<i>Sterculia foetida</i> , . 28 "

The impossibility at present of tracing the particular trees noticed by Edye under his description of the poon of commerce, reduces the value of his observations.

POONA, a town and military cantonment in the Dekhan, which gives its name to a revenue district, lying between lat. 17° 54' and 19° 23' N., and between long. 73° 24' and 75° 18' E., with an area of 5348 square miles; population in 1881 was 900,621. It is above the ghats, and about 119 miles south-east from Bombay. The provinces of Aurangabad and Bijapur are arranged into two divisions, termed the Poona and the Southern districts, the latter with its headquarters at Belgaum. From July to November, Poona city is the seat of the Government of Bombay. It is in lat. 18° 30' 23" N., long. 73° 55' 33" E., and is about 1840 feet above the sea. The annual fall of rain is 25 inches, the mean temperature is from 55° to

96°, and the rock is greenstone and greenstone amygdaloid. One of the finest views of the city and the surrounding country is to be obtained from the fort of Parbattiah, once a Mahratta stronghold, now famed for its Hindu temple. The approach leads through a shady avenue of tamarind, mango, and coconut trees, to a small lake with an island, clothed with fruit trees to the very margin of the calm and glassy water, in which are reflected the broad leaves of the plantain and palm, festooned with a woodbine-like creeper. This place, until the year 1817, was the city in which the Peshwa rulers of the Mahrattas resided. A battle was fought there between the British and the Peshwa on the 16th November 1817, and the city was taken on the 19th November. The population of the city in 1872 was 90,437. The cultivators are chiefly Kunbi and Mali; the Brahmans are numerous, the Muham-madans in the district about 40,000, Parsees 1263, and Jews 281. The predatory tribes are the Ramusi, Bhil, and Koli, and the menials are the Dher, Mhair, and Mhang.

POONAC. TAM. A name for the cake left after expressing the oil from the coconut pulp. It is used as manure and for feeding stock.

POONAMALLEE, a military station 13 miles due west of Madras. An old fort stands about 400 yards east of the barracks, and the pettah is on the S.E.

POOREE, a town and district of the province of Orissa. The town is in lat. 19° 48' 17" N., long. 85° 51' 39" E. It is 250 miles S.W. from Calcutta, and 595 miles N. of Madras. Pooree town is celebrated for its famed temple of Jagannath. It stands on a low, sandy, hilly ridge. It has a population of 22,695. The great pagoda at the S. of the town is 180 feet high.

POPE, Pape, Papst, Papa, FR., GER., IT., SW., is the title of the religious sovereign of the Romish sect of Christians. The whole number of Popes from St. Peter to Pius IX. is 267. Of these, 82 are venerated as saints, 33 having been martyred; 104 have been Romans, and 103 natives of other parts of Italy; 15 Frenchmen, 9 Greeks, 7 Germans, 5 Asiatics, 3 Africans, 3 Spaniards, 2 Dalmatians, 1 Hebrew, 1 Thracian, 1 Dutchman, 1 Portuguese, 1 Candiote, and 1 Englishman. The name most commonly borne has been John; the 23d was a Neapolitan, raised to the chair in 1410. Nine pontiffs have reigned less than 1 month, thirty less than 1 year, and eleven more than 20 years. Only five have occupied the pontifical chair over 23 years. These are, St. Peter, who was Supreme Pastor 25 years 2 months 7 days; Silverius I., 23 years 10 months 27 days; Hadrian I., 23 years 10 months 17 days; Pius VI., 24 years 8 months 14 days; Pius IX., who celebrated his 25th year in the pontifical chair, June 16th, 1871. Alexander VI., Pope of Rome, on the 4th May 1493, arranged the world into two hemispheres, and decreed that all lands discovered in the eastern half should belong to the Portuguese, all in the western half to the Spaniards. In a treaty between Spain and Portugal, dated 7th June 1494, the demarcation line was drawn 370 leagues west of the Cape de Verde Islands.

POPHAM, SIR HOME. A naval officer of the British service, employed in 1802 as ambassador to the States of Arabia.

POPLAR.

POPLAR.

Poppeltree,	DAN.	Populus,	LAT.
Popelier,	DUT.	Choupo, Alemo, . .	PORT.
Peuplier,	FN.	Asina,	RUS.
Pappel, Pappelbaum, GER.		Alamo,	SP.
Ploppa,	IT.	Poppeltrad,	SW.

Trees of the *Populus* genus of plants grow in Europe and in the colder parts of S. Asia. The aspen, *P. tremula*, is found in the valley of the Yang-tze and other parts of China. The Euphrates poplar, *P. Euphratica*, grows in the Panjab, as also does *P. alba*, the white poplar; the balsam poplar, or *P. balsamifera*; the Himalayan poplar, *P. ciliata*; the Italian poplar, *P. nigra*. See *Populus*.

POPPY, *Papaver somniferum*.

Khas-khas,	ARAB.	Chass chassa, . . .	SANSK.
Pasto,	BENG.	Apyanam,	"
Yang-tse-suh,	CHIN.		

The poppy is cultivated in Europe, Egypt, Central Africa, Asia Minor, Persia, in British India, and in China, for its products, viz. the opium or concrete juice, its capsules or poppy heads, the seed, and poppy seed oil; but of these opium is by far the most important, bringing to British India an annual revenue of six or seven millions sterling. The plant on its growth is liable to be attacked by several insects.

Opium is obtained from the poppy in Asia Minor, Egypt, Persia, S. E. of Asia, and in China. It is used as a narcotic and soporific, and morphia and other drugs are prepared from it. In medicine the capsules are employed in fomentations for inflamed surfaces, and a syrup is prepared from them to allay cough, etc. In Upper India an intoxicating liquor is prepared by heating the capsules of the poppy with jagari and water.

The seeds yield by expression about 50 per cent. of a bland and very valuable oil, of a pale golden colour, fluid to within 10° of the freezing point of water. It dries easily, is inodorous, of agreeable flavour, and partially soluble in alcohol. By exposure to the rays of the sun in shallow vessels, the oil is rendered perfectly colourless. It is expressed in India by the common stone mill. Poppy seed is eaten by the natives made into sweetmeats, provided the opium has been extracted from the seed-vessel, otherwise it is bitter and narcotic, and under these circumstances the oil extracted is also bitter. The oil is used for cooking and burning. Poppy seed is being largely exported from India, chiefly to France and Great Britain.

Cwt.	Ra.	Cwt.	Ra.
1874-75, 402,296	22,12,589	1878-79, 249,072	16,60,749
1875-76, 253,326	13,54,194	1879-80, 530,382	37,51,347
1876-77, 351,133	18,43,647	1880-81, 579,544	39,76,254
1877-78, 449,394	26,45,287	1881-82, 603,289	39,04,065

See Chandoo; Opium; *Papaver*.

POPULATION OF THE EARTH. The estimates must be little better than guesses for Africa. For this continent Dr. Rohlf maintains that an estimate of 100 millions is quite enough, while Behm and Wagner retain the old figure of 200 millions with considerable hesitation. For China, the most varied estimates have been given, from 200 to 500 millions; and Behm and Wagner have come to the conclusion that hitherto there have been over-estimations of the population of this vast empire; so that, instead of a population of 434½ millions (including Corea), they reduce it to 379½ millions.

POPULATION OF THE EARTH.

According to the latest data, the following are the areas and populations of the various continents, with the number of inhabitants per square kilometre:—

			No. per sq. kilo.
Europe,	9,730,576	327,743,400	34
Asia,	44,560,850	795,591,000	18
Africa,	29,828,253	205,823,200	7
America,	38,473,138	100,415,400	2½
Australia & Polynesia, .	8,952,855	4,282,000	0.5
Polar Regions,	4,478,200	82,500	—
Total,	136,033,872	1,483,867,500	10½

Europe, its area and populations.—Germany, 1880, 540,496 sq. kil., 45,234,061 inhabitants; Austria, 1880, 299,984 sq. kil., 22,144,244 inhabitants; Hungary, 1880, 322,628 sq. kil., 13,695,184 inhabitants; Holland, 1880, 32,999 sq. kil., 4,060,580 inhabitants (estimate); Luxemburg, 1880, 2587 sq. kil., 209,570 inhabitants; Belgium, 1879 (estimate), 5,536,654 inhabitants; Great Britain and Ireland, 1881, 314,951 sq. kil., 35,246,562 inhabitants; Switzerland, 1880, 413,390 sq. kil., 2,846,102 inhabitants; France, 1881, 528,571 sq. kil., 37,321,186 inhabitants; Spain, 1877, 508,093 sq. kil., 16,625,860 inhabitants; Portugal, 1878 (including Azores and Madeira), 92,828 sq. kil., 4,550,699 inhabitants; Italy, 1881, 288,539 sq. kil., 28,452,639 inhabitants; Greece, 1882 (estimate), 64,688 sq. kil., 1,979,423 inhabitants; Roumania, 1881, 129,947 sq. kil. (estimate), 5,376,000 inhabitants (official); Servia, 1881 (estimate), 48,582 sq. kil., 1880 (estimate), 1,700,211 inhabitants; Montenegro, 1882 (estimate), 9030 sq. kil., 236,000 inhabitants (official estimate). Turkey—I. Immediate Possessions, 1882 (estimate), 165,438 sq. kil., 4,490,000 inhabitants; East Roumelia, 1880, 35,901 sq. kil., 815,513 inhabitants; Bulgaria, 1881, 63,865 sq. kil., 1,998,983 inhabitants; Bosnia, Herzegovina, and Novi Bazar, 1879, 61,065 sq. kil., 1,326,453 inhabitants. Including the tributary island of Samos, the area of the Turkish possessions in Asia is 1,899,069 sq. kil. and the population 16,357,000. Thus the total area of Turkey in Europe and Asia is 2,225,445 sq. kil. and population 24,987,000. Denmark, 1880, 38,440 sq. kil., 1,969,039 inhabitants (Faroes, 1333 and 11,220, Iceland, 104,785 and 72,438, Greenland, 88,100 and 10,000, Danish Antilles, 358 and 33,763),—total Danish kingdom, 283,000 sq. kil., 2,096,400 inhabitants; Sweden, 1880, 450,574 sq. kil., 4,565,668 inhabitants; Norway, 1880, 325,422 sq. kil., 1,913,500 inhabitants; Russia, 1879, 5,427,124 sq. kil., 83,626,590 inhabitants, whereof European Russia has 4,888,713 sq. kil. and 74,493,809 inhabitants, Poland 127,310 and 7,104,760, Finland 373,603 and 2,028,021, Sea of Azof 37,496 sq. kil. Russia in Asia has had changes of boundary between Russia and China in Kuldja and in the Black Irtysh; the formal annexation of the Tekke-Turkoman region; the adjustment of the boundary between Russia and Persia in the Trans-Caspian region. The general result for Russia in Asia is as follows:—The Caucasus, 472,666 sq. kil., 5,546,554 inhabitants; Trans-Caspian territory, 327,068 sq. kil., 203,000 inhabitants; Siberia, 12,495,109 sq. kil., 3,911,200 inhabitants; Central Asia, 3,017,760 sq. kil., 5,086,000 inhabitants. Asiatic Russia has thus an area of 16,812,604 square kilometres and a population of 14,696,750; adding to this the figures for Russia in Europe, we have the total area of the Russian Empire as 21,789,728 square

POPULATION OF THE EARTH.

kilometres, and the population 98,323,000. For the independent Turkoman region, Behm and Wagner give an area of 206,500 sq. kil. and a population of 450,000; for Khiva, 57,800 sq. kil. and 700,000 inhabitants (the estimate of 1873); and Bokhara (including Shignan, Roshan, Karategin, etc.), 239,000 sq. kil. and 2,130,000 inhabitants.

Arabia, 3,156,600 sq. kil. (including Sinai and the Syrian Desert) and 5,000,000 inhabitants; of this, an area of 2,507,390, with a population of 3,700,000, is independent of Turkey.

Persia.—Area is given as 1,647,070 sq. kil.; the population on an estimate by General Schindler in 1881, is given as 7,653,000.

Afghanistan.—Area, 721,664 sq. kil., and a population of 4,000,000 (including Wakhan, Badakhshan, Kunduz, Chalus, Balkh, Maemana, and Herat).

Kafiristan has an area of 51,687 sq. kil., and Behm and Wagner accept Major Raverty's estimate of 100,000 families, or 500,000 inhabitants.

The figures, then, are — for China proper, 4,024,690 sq. kil. and 350 million inhabitants; and for the tributaries of Manchuria, Mongolia, Tibet, Zangaria, and East Turkestan, 7,531,074 sq. kil. and 21,180,000 inhabitants,—in all, for the Chinese Empire, 11,555,764 sq. kil. and 371,200,000 inhabitants. With regard to Corea, the area is stated as 236,784 sq. kil. As to its population, the most varied estimates have been given,—from $7\frac{1}{2}$ millions to 15 millions; Messrs. Behm and Wagner estimate $8\frac{1}{2}$ millions.

The area of Japan, 1881, and its dependencies (the Kuriles, Loo-Choo, and Benin Islands) 382,447 sq. kil., and the population 36,357,212.

The total area ruled by Britain in India, including Tributary States and Further India, is 1,457,244 square miles (3,774,193 sq. kil.), and the population 252,541,210.

Nepal, Bhutan, etc., States.—The area of 234,000 sq. kil. is given, and a population of 3,300,000; French possessions, 508 sq. kil., population (1879) 276,649; Portuguese possessions, 3355 sq. kil., population (1877) 444,987; Ceylon, 24,702 sq. miles (63,976 sq. kil.), and the population (1878) 2,606,930.

In Further India — British Burma, 229,351 sq. kil., 3,707,646 inhabitants; Manipur, 19,675 and 126,000; people east and south of Assam, 65,500 and 200,000; Burma, 457,000 and 4,000,000; Siam, 726,850 and 5,750,000; Annam, 140,500 and 21,000,000; French Cochinchina, 59,456 and 1,597,013; Cambodia, 83,861 and 890,000; Independent Malacca, 81,500 and 300,000; Straits Settlements, 3742 and 390,000.

Islands.—Andamans, 6497 sq. kil. and 14,500 inhabitants; Nicobars, 1772 sq. kil. and 5500 inhabitants; Sunda Islands and Moluccas, 1,693,757 sq. kil. and 28,867,000 inhabitants; Philippines, 296,182 sq. kil. and 6,300,000 inhabitants. Dutch possessions (including New Guinea and the Papuan Islands), 1,462,400 sq. kil., 27,962,000 inhabitants. For the British territory of North Borneo an area of 57,000 sq. kil. is given, and a population of 150,000.

For Australasia the census figures of 1881 are as follows for population:—New South Wales, 751,468; Victoria, 62,346; Queensland, 213,525; South Australia, 279,865; West Australia, 81,000. Total — Australia, 2,138,200, or, with 55,000 natives, 2,193,200; Tasmania, 115,705; New Zealand, 489,933.

POPULATION OF THE EARTH.

To New Guinea an area of 785,362 sq. kil. is assigned (or, with the neighbouring islands, 807,956), and a population of 500,000. Of Oceanic Islands, the Society Islands (Tahiti, Moorea, etc.), the Tuamotu and Gambier groups, and other Pacific islands, have been annexed by France, and Rotumah has been taken over by Britain. For Fiji, the population at the end of 1880 is given—121,884. Melanesia, 145,855 sq. kil., 617,400 inhabitants; Polynesia, 9791 and 121,500; Sandwich Islands, 17,008 and 57,985; Micronesia, 3530 and 91,600. Total—Oceania, 176,184 sq. kil. and 888,500 inhabitants.

Morocco is given 812,332 sq. kil. and 6,140,000 inhabitants. Recent changes in the administrative divisions are noticed, and the total area given is 667,065 sq. kil., with 2,867,626 inhabitants (1877). For 1880, the area of the Civil Territory stands at 73,835 sq. kil., and its population 1,882,124. Tunis, under French protection, has an area of 116,348 sq. kil. and population 2,100,000. Tripoli, Fezzan, and Barka have an area of 1,033,349 sq. kil., and a population of 1,010,000. The Sahara, outside the Mediterranean and Soudan States, is credited with an area of 6,180,426 sq. kil., and a population of 2½ millions.

Egypt proper has now an area of 935,275 sq. kil., and a population of 5,583,774; adding to this the Libyan Oases and the Egyptian Soudan, the whole of the territory under the Khedive covers an area of 2,986,900 sq. kil., with a population of 16,400,000. For the States of Central Soudan (Wadai, Bagherini, Bornu, Kanem, Socota, etc.), there is the total area 1,714,984 sq. kil., with a population of 31,800,000. For the French possessions in Senegambia, the population is given as 192,924 for 1879; but this does not include the extensive territory in the Upper Niger brought under French protection in 1881. For Sierra Leone the population of the census of 1881 is given—60,546; Lagos (1881), 75,270; Gold Coast (1872), 408,070. Iberia is given an area of 37,200 sq. kil., and a population of 1,050,000, of whom, however, only 18,000 can certainly be regarded as civilised. For Abyssinia 333,280 sq. kil. and 3,000,000 inhabitants are given; while Galla and Somali Lands have an area of 1,897,000 sq. kil., and a population of 15½ millions. All the countries in the region of the Great Lakes are classed together as the Equatorial Regions; those north of the equator having an area of 2,254,980 sq. kil. and a population of 27,000,000, and those south of the equator 1,717,900 sq. kil. and 20,000,000 inhabitants.

In S. Africa, the Portuguese possessions on the west coast are given as 809,400 sq. kil. and the population 9,000,000, and on the east coast 991,150 sq. kil. and only 1,000,000 inhabitants. The independent States in South Africa are Muta Janvo's kingdom, Kasongo's, Marute Mabunda, Matabele Land, Swasi Land, Orampo Land, etc., the total area being stated as 6,255,082 and the population 16,296,350.

The figures for British South Africa are:—Cape Colony, 199,950 square miles, 780,757 inhabitants (1880); Basutoland, 9720 and 128,176 (1875); West Griqualand, 17,491 and 45,277 (1875); Transkei, 15,573 and 409,944; Natal, 18,750 and 364,338 (1880);—total, 261,484 square miles, 1,728,492 inhabitants.

Transvaal is estimated at 285,363 sq. kil. and

POPULUS ALBA.

the population (1881) 816,960, of whom 40,000 are white. The calculated area of the Orange Free State is 107,439 sq. kil.; the population of 1880 was 133,518, of whom 61,022 were white.

The African islands area in the Atlantic is 15,801 sq. kil. and the population 572,600; in the Indian Ocean, 610,141 sq. kil. and 4,330,000 inhabitants.

America.—Its areas and populations of 1881 are—Ontario, 107,780 sq. miles and 1,923,228 inhabitants; Quebec, 193,355 and 1,359,027; New Brunswick, 27,322 and 321,233; Nova Scotia and Cape Breton, 21,731 and 440,572; Manitoba, 150,000 and 65,954; Prince Edward Island, 2173 and 108,891; British Columbia, 355,999 and 49,459; Territories, 2,346,983 and 56,446;—total, 3,205,343 sq. miles and 4,324,810 inhabitants. Newfoundland has an area of 42,734 sq. miles, and population in 1881, 181,753. The French possessions in North America (St. Pierre, Ile-aux-Chiens, and Miguelon) have an area of 235 sq. kil. and a population (1879) of 5224. The total area is stated at 3,602,990 sq. miles, and the total population 50,442,066.

For Mexico the area is 1,945,471 sq. kil.; the population is stated to be 9,577,279.

For the Central American States the figures are—Guatemala, 121,140 sq. kil., 1,252,497 inhabitants (1881); Honduras, 120,480 and 350,000; British Honduras, 19,585 and 24,710; Salvador, 18,720 and 554,785 (1878); Nicaragua, 133,800 and 300,000 (1877); Costa Rica, 51,760 and 185,000 (1874); Panama State, 81,823 and 224,600 (1870);—total, 547,308 sq. kil. and 2,891,600 inhabitants.

The total area of the West India Islands is 244,478 sq. kil., and the population (mostly that of 1879–81) 4,617,450. The British possessions have an area of 34,500 sq. kil. and a population of 1,206,522. Guiana is divided as follows:—French, 121,413 sq. kil. and 36,000 inhabitants (1879); Dutch, 119,321 and 63,525 (1879); British, 221,243 and 248,110 (1879). Against other South American States are the following figures:—Venezuela, 1,137,615 sq. kil., 2,675,245 inhabitants (1881); Colombia, 830,670 and 3,000,000; Ecuador, 643,295 and 946,033, besides 200,000 wild Indians; Peru, 1,119,941 and (1876) 3,050,000; Bolivia (without considering probable results of recent war), 1,297,255 and 2,325,000; Chili (including results of recent division of Patagonia and Tierra del Fuego between Chili and the Argentine Republic), 537,182 and 2,420,500; Argentine Republic, 2,835,969 and 2,540,000 (1880); Uruguay (1880), 186,920 and 438,245; Paraguay, 238,290 and 293,844; Brazil, 8,337,218 and 11,108,291.—*Times*.

POPULUS ALBA. *Linn.* White poplar.

Rikkan, CHEN., KANGRA.	Chita bagnu, . JHELMUM.
Prasti, Sannan, . . .	Fras, Jangli fraat, KANGRA.
Chanuni, . . .	Mal, . SUTLEJ, KANAWAR.
Safeda, Baid, . . . HIND.	Spelda, Sperda, TR. INDUS.

The white poplar is found in the Sutlej valley between Rampur and Sungnam. It grows to a considerable size in parts of the basins of the Jhelum and Chenab, and is occasional on the Sutlej, ranging from 4000 to 8500 feet, reaching 9000 in Tibet. Trees of 6 and even 8 feet in girth and 50 or occasionally 70 in height are seen, but they are mostly considerably smaller than these sizes. The tree is also common, planted,

POPULUS EUPHRATICA.

in parts at least of Afghanistan (Thomson); is not uncommon, planted, at Peshawur, and grows at Lahore. The tree grows to a large size in Pangi, and is used for roofing in Ladakh and Lahul. It is propagated by cuttings. The timber is white and soft, but not strong or durable, and is not valued. In Afghanistan it (with perhaps that of *P. fastigiata*) is used for manufacturing the round boxes in which grapes are exported to India.

POPULUS BALSAMIFERA. *Linn.*

Yarpa, CHENAB.	Berfa, Makal, . LADAKH.
Balsam poplar, . . . ENG.	Maal, Changma, . PANOL.

On the Chenab river, both *Populus balsamifera*, 'yarpa,' and *P. nigra* are planted near villages, but in much smaller numbers than the willow. Dr. Stewart says *P. balsamifera* is common, planted in Lahul at 9000 to 10,000 feet, and in Ladakh up to 14,000 feet, in Spiti to 12,500 feet. Aitchison mentions that in Lahul it is never cut, as it is supposed to be the abode of the dewa (deity), and festivals are held under some of the finer specimens, which reach 50 feet in height. In Ladakh they reach 60 or 70 feet, and Dr. Stewart had there noted a plank of the wood 2½ feet broad, and seen one tree of 9 feet girth.

POPULUS CILIATA. *Wall.*

Chalonwa, REAS, SUTLEJ.	Bagnu, Phalja, . JHELMUM.
Rikkan, Bad-frastu, CHEN.	Sulali, Dudfras, KANGRA.
Flassu, Chanun, Pabe, . .	Palach, Falah, . PANJAB.
Pahari pipal, . . . HIND.	Phalja, . . .
Safeda, JHELMUM.	Chalon, Tallon, Falah, RAVI.
Shawa,	Kramali, . . . SUTLEJ.

This grows in the Sutlej valley between Rampur and Sungnam at an elevation of 6000 feet. It is common wild in the Panjab Himalaya up to the Indus at from 4000 to 10,000 feet; occasionally reaching 10 feet in girth, and, from its leaves resembling those of the pipal, *Ficus religiosa*, is frequently called by that name by men from the plains. The wood is soft and not valued, but is used for water-troughs, and in Hazara occasionally for gun-stocks. In some places the leaves are given as fodder. There is a plentiful floss round the seeds, the coma of which has at times been recommended for paper-making, etc.

POPULUS EUPHRATICA. *Oliv.*

Hodung, Hotung, LADAKH.	Bahan, Push, . SUT., T. IND.
Bhan, Labhan, . PUSHTU.	Safeda, Sperawan, . .

The tree of the banks of Euphrates, has been found by Griffith, Stocks, and others on the banks of the Chenab and Indus, in Sind and Multan, also at intervals along the valley of the Indus, within the mountains, but it appears to be far from common there, and to confine itself to hot, sandy places. In several parts of Nubra it is common enough, but only, so far as Dr. Thomson observed, on the south side of the Shayuk. It is thus remarkable for its extended distribution. This is also remarkable for the very changeable shape of its leaves, which vary from broadly deltoid and coarsely toothed to narrow linear and quite entire. The leaves of the full-grown tree are generally broad and much toothed, while young plants have very narrow leaves; the shoots of pollard plants, which are common, the tree being much used for fuel, are also narrow. The wood being white (and so not flesh-coloured) is preferred for constructive purposes by Hindus, and for the same reason the twigs are used by this them as tooth-sticks. They are exported for that

POPULUS NIGRA.

purpose. In Sind and Hyderabad lacquered work-boxes are made of it, and it is used in turnery. The wood is rarely used for boats in Sind, but is said to be largely so employed on the Euphrates. It is also employed for fuel in the south (in part even for steamers, although from its lightness it is not very suitable); and in parts of Tibet, where it grows up to 10,500 feet, it furnishes much firewood. In Sind the bark is given as a vermifuge, and the liber is employed as a gun-match. It is common in clumps on the Sutlej bank, but does not grow large, and is generally crooked. It flowers in February, and throws up root-shoots with great rapidity. The wood is objected to for steam fuel, owing to the great emission of sparks, which endanger the awnings.

POPULUS NIGRA. Linn.

Var. P. pyramidalis.

Fraat, Praat, Farah, CHEN.	Changma, . . . LADAKH.
Mokhal, Paakhu, . . .	Yarpa, Yulatt, . . .
Italian poplar, . . . ENG.	Kabool, Kaool, . . .
Safeda, . . . HIND.	Kramali Biuns, . . . SUTLEJ.

This tree is commonly planted in Kashmir, on the Chenab, at from 3000 to 11,500 feet, and on the Sutlej and in Ladakh to 13,300 feet. It is common in Afghanistan, grows luxuriantly in Kashmir, where trees with 6 to 12 feet of girth, and from 90 to 100 feet high, are to be seen; a spirit is distilled from the bark.

POPULUS SPINOSA. Smith. Yan-yang-hoh, CHIN. A plant of China, leaves medicinal.

POPULUS TREMULA. Smith. Fu'i, CHIN.; Aspen, ENG. Grows in the valley of the Yangtze. A tree like *P. tremula*, the aspen, has been received from Lahul.—*Stewart's Panjab Plants; Powell's Panjab; Cleghorn's Panjab Report; Thomson's Trav. W. Himalaya*, pp. 189, 207; *Gamble; Smith's Mat. Med.*

PORACCHI, in his *Isolario*, published at Padua in 1570, gives an account of the inhabitants of Batech, which Sir J. E. Tennant surmises to be Batticaloa. He describes them as being constantly at war with their neighbours, eating the flesh of their prisoners, and selling their scalps at high prices.—*Tennant's Ceylon*.

PORAMBOK. TAM. Uncultivable land; in the Madras Presidency are 23,964,160 acres. Ayacut, arable land; of this in Madras Presidency 14,183,329 acres are not occupied or not cultivated, and 27,516,511 are under crops.

PORBANDAR, the chief town of a Native State of same name in the Political Agency of Kattywar, Bombay. Area, 535 square miles, with 103 villages; population (1872), 72,077. Porbandar is built on a creek of the sea, on the S.W. coast of Gujerat. The inhabitants carry on a brisk trade with Bombay, Sind, and Malabar.—*Imp. Gaz.*; *Pottinger's Tr. p. 8*.

PORCELAIN.

Tao-ki, . . . CHIN.	Cheni-kam, GUJ., HIND.
Porcelaine, . . . FR.	Porcellana, . . . IT.
Porcelan, . . . GER.	Porcelana, . . . SP.

Very fine earthenware, white, semi-transparent, and sometimes beautifully coloured and gilt. Chinese porcelain of an exceedingly fine texture has long been renowned; but British porcelain, although unable to boast of such fine specimens of costly workmanship, has risen to be a matter of great importance. Dresden has long been famous for the beauty of its porcelain productions; but the finest and most magnificent work of European

PORCELAIN.

ware has been produced at Sevres in France. The name was given by the Portuguese to the semi-transparent cups they saw on their arrival in China, from their resemblance to the lustrous naacre of sea-shells or porcellana, for they supposed it to be a composition of egg-shells, fish-glue, and scales. In China, kao-lin, quartz, and soapstone are ingredients used in the manufacture.

Kao-lin or Kau-ling, i.e. high ridge, the name of a hill near Jau-chau-fu, is obtained from the disintegrated granite in that region, and is nearly pure felspar; by slow decomposition the alkali and part of the silex is removed and water imbibed. An analysis of the clay used in Europe shows the constituents to be—Silica, 43; alumine, 36; water, 19; and a trace of magnesia and carbonate of lime.

The Pe-tun-tse or Peh-tun-tsz of China is nearly pure quartz, and the best of the Chinese is brought from Hwui-chau in Ngau-hwui, but is procurable elsewhere; it is reduced to an impalpable powder by toilsome processes, and formed into cakes to sell to the manufacturers.

Steatite or soapstone, called Hawh-shih, is also employed, and some forms of carbonate and sulphate of lime, which are mixed in to produce an inferior article, though still among the best now manufactured; the soapstone ware is more brittle than the other, but fine, white, and very light. The proportions of the ingredients vary according to the desired fineness of the ware.

Coloured Ware of China.—After the paste or biscuit is formed into the required shape, the dishes are painted by workmen, each of whom takes a single colour and a single part of the picture. The whole surface of the dish is sometimes covered with gay figures, but the most common decorations consist of heroes, statesmen, etc., in different attitudes and costumes, and sentences beautifully written referring to them and their times. Most of the inscriptions and figures seen upon mantel-piece ornaments, teacups, and jars are of this nature, explaining some event in the life, or a panegyric upon the personage there represented; this affords an opportunity for persons to show their scholarship in explaining the quotation. The colours used on the fine porcelain have long been admired; and Des Guignes, who made many endeavours to procure samples of them and ascertain the mode of mixing them, has given the composition of some of the principal colours; but at present there is probably little to learn from them in this branch. After the workmen have finished the painting, the pieces are covered with a liquid mixture of alkali, obtained from burning ferns with the quartzose Pe-tun-tse, after which they are baked. The best articles are surrounded with a case lined with sand, in order to protect them from the flame; and as the furnaces are only about six or eight feet square, the closest attention can be paid to the condition of the ware, and the exact time ascertained for reducing the heat and opening the kiln. Some of the pieces brought from the interior are perfectly white, and the patterns are afterwards painted and fixed on them according to the fancy of the customer. The finest specimens are from the kilns of King-teh-chiu in Kiang-si.

Black China-ware, the Ow-mi-ew, ornamented with gold, is very much prized in China. To make this ware they mix three ounces of azure and

seven of the oil of stones; this is laid on the ware, and when perfectly dry it is baked, after which the gold is laid on, and the vessel is rebaked.

Cracked porcelain.—The To-wi-kie China-ware is highly prized under the cognomen of cracked porcelain. It is prepared simply by varnishing the vessels with a whitish ash-coloured varnish, made from calcined transparent white pebbles. This has the property of marbling and veining the ware, and giving it an appearance as if it had been fractured into many pieces, which had been carefully reunited.

Chinese red colour, used in the porcelain painting, is made from Taow-fau, or copperas. Their mode of preparation is by putting a pound of copperas into a crucible, over which another crucible is luted, having a small hole in it, which is lightly covered over; around these they pile charcoal, and enclose the whole within bricks, when they fire the charcoal, and as soon as the fumes issuing from the aperture in the crucible become of a light colour, a small quantity of the copperas is taken therefrom, laid upon fire-wood, and moistened with water; if the colour then prove to be a bright red, they remove the fire, if not, they allow the copperas to remain subjected to the heat until it assumes that colour, and then remove the fire. When the crucibles are cool, a cake is found in the lower one, but the finest colour is encrusted on its sides and on the bottom of the upper crucible, which is kept separate from the cake; the pound of copperas produces about four ounces of colour.

Chinese white colour, also used in painting porcelain, is made from calcined transparent flint, to an ounce of the powder of which they add an equal quantity of white lead.

Chinese green, a beautiful colour, is prepared with one part of powdered calcined flint, two parts of white lead, and six parts of the scales of well-hammered copper.

Chinese violet is produced by adding an additional quantity of the prepared white to the green.

Chinese yellow is made by combining equal portions of prepared white and red.

All these various colours are used by the China-ware painters, having been previously dissolved in gum-water, to which they occasionally add salt-petre, copperas, or white lead. The colours are laid on after the first baking and varnishing of the China-ware, but the beauty and depth of the colouring is imperceptible until after the second baking.—*Williams' Middle Kingdom*, ii. p. 116. See Ceramic Manufactures; Earthenware; Pottery.

PORCUPINE.

Saru,	BENG.	Porco spinaso, . . .	IT.
Porc-épie,	FR.	Salendra,	MAHR.
Stachelschwein, . .	GER.	Puerco espin, . . .	SP.
Saori,	GUJ.	Yeddu pindi, . . .	TEL.
Sarsel,	HIND.		

Porcupine, in Europe, Asia, and Africa, is a name of several species of the genera *Hystrix* and *Atherura*, and, in America, of genera of the group *Cercolabinae* or *Philodendree* more or less arboreal. In British India, the species are known as the Indian porcupine, the Bengal porcupine, the crestless porcupine, and the Malay porcupine; the crested porcupine belongs to Europe, and the African porcupine is the H.

Africa-Australis, *Peters*. Of Ceylon porcupines, Dr. Kelaart is quite certain of *Hystrix leucura*, *Sykes* (*H. Kirautirostris*). Mr. Blyth compared it with Waterhouse's description, and it quite corresponds; so that *H. Zeylonensis* makes a second species of the genus in Ceylon. He terms it *H. etava*. In Ceylon the porcupine is destructive to the young cocoanut palms, to which it is a pernicious and persevering, but withal so crafty, a visitor, that it is with difficulty any trap can be so disguised, or any bait made so alluring, as to lead to its capture. The usual expedient in Ceylon is to place some of its favourite food at the extremity of a trench, so narrow as to prevent the porcupine turning, whilst the direction of his quills effectually bars his retreat backwards. On a newly-planted cocoanut tope at Hang-welle, within a few miles of Colombo, Sir J. E. Tennant had heard of as many as twenty-seven being thus captured in a single night; but such success is rare. The more ordinary expedient is to smoke them out by burning straw at the apertures of their burrows. At Ootacamund, spring-guns have been used with great success, placing them so as to sweep the runs of the porcupines. A planter on the Neilgherries recommends that a single-barrel pistol be procured and an iron rat-trap; the pistol must be placed so that on being discharged the shot will sweep the gap or entrance. In this position it must be firmly fastened. The trap is then to be set, the compressed spring let in between the trigger and trigger guard of the piece, and tied to a peg; then a string blackened with ink attached to the plate of the trap is stretched loosely along the gun and across the gap, and fastened,—so that nothing can pass in without touching it. As the cord is loose, the animal in entering gets well opposite the gun before it tightens and springs the trap, the piece having been placed on full-cock is of course fired by the rising of the trap-spring. A pistol is much better than a gun, because the latter has to be set horizontally, in which case it is very liable to miss or only wound the animal it is set for; a pistol can be placed vertically, in which case it cannot but hit anything passing through the gap under it. The flesh is esteemed a delicacy in Ceylon, and in consistency, colour, and flavour it very much resembles young pork.

Atherura fasciculata, the Malay porcupine, is found on the Tiperah Hills, and thence southwards to the Malay Peninsula. It has a much larger tail than the true porcupines, ending in a tuft of long bristles. The spines of the back are less elongated.

Hystrix Bengalensis, *Blyth*, Bengal porcupine, is the *H. Malabarica*, *Sclater*, and is found in Travancore, Cochin, S. Malabar, Bengal, Assam, and Arakan. Length, head and body 28 inches, tail 8 inches. In Malabar its flesh is more esteemed than that of the common variety.

Hystrix leucura, *Sykes*, Indian porcupine.

<i>H. hirsuti-rostris</i> , <i>Brandt</i> .	<i>H. cristata Indica</i> , <i>Gray</i> .		
<i>H. Zeylanensis</i> , <i>Blyth</i> .	<i>Hard</i> .		
Sajru,	BENG.	Sarsel,	HIND.
Yed,	CAN.	Salendra,	MAHR.
Hoigu,	GOND.	Dumai,	NEPAL.
Say, Sahi, Sayal, . .	HIND.	Yeddu pandi, . .	TEL.

Found over all India from the Himalaya to Cape Cormorin, except in Bengal. It is 32 inches long, and its tail is seven inches. They charge

backwards on their foes, and dogs often get seriously injured. The flesh is good eating.

Hystrix longicauda, Mars., Crestless porcupine.
H. *alophus*, Hodgson. | Acanthion Javanicum, Cuv.
H. *Hodgsonii*, Gray. | Achotia dumai, . NEPAL.
Sathing, . . . LEPOHA.
O'e, . . . LIMBU.

This inhabits Nepal and Sikkim and southwards into Burma, Malayana, and the Archipelago. They are mischievous, rooting up the tuberous roots sown in the gardens; they breed in confinement; their flesh is good. They measure 22 to 24 inches from snout to vent, and stand about 8 inches high.—*Tennant's Ceylon*, p. 45; *Jerdon's Mammals*; *Beng. As. Soc. Journ.*, August 1847.

PORCUPINE ANT-EATER of Australia, the *Echidna hystrix*, called also the native porcupine or hedgehog. It is nocturnal, generally sleeping during the day, and burrowing actively at night.

PORPHYRY, a crystalline rock containing crystals of minerals. Porphyry quarries were known to the ancients as existing in Egypt. At the mountain called Jabl Dekhan, the Mons-Porphyrus, their colours are green, purple, and red. Porphyries of various kinds occur in many parts of British India, but are not utilized. Felspar of a granular texture, without crystals imbedded, is claystone; with imbedded crystals of felspar, it is porphyry. Hornblende mixed with uncrystallized felspar makes some greenstones; with imbedded crystals of felspar this becomes greenstone-porphyry. Hence by this mode of designation we have pitchstone-porphyry, greenstone-porphyry, basaltic-porphyry, felspar-porphyry. Among volcanic rocks, porphyritic trachytes are common. Greenstone porphyry occurs near Secunderabad; porphyritic granite from the upheaved range of isolated rocks at Burmonee, 8 miles N. of Sasseram, and 10 miles from the nearest hills of the Rohtas range.

PORPOISES. This class of mammals of the family Delphinidae belongs to the Cetacea order.

ORDER, CETACEA, The whale tribe.

Cetæ, Auctorum. | Mutalata, Owen.

Fam. Delphinidae, Porpoises.

Delphinus perniger, Ell., Blyth, Bay of Bengal.
D. plumbeus, Dussumier, Malabar coast.
D. eurynome, Gray, Bengal Bay.
D. godams, Bengal Bay.
D. sandams, Owen, Bengal Bay.
D. lentiginosus, Owen, Bengal Bay.
D. maculiventer, Owen, Bengal Bay.
D. fusiformis, Owen, Bengal Bay.
D. pomegra, Owen, Bengal Bay.
Steno frontatus, Cuvier, Bengal Bay.
S. attenuatus, Gray, Bengal Bay.
Neomeris phocaenoides, Duss., Bengal Bay.
Platanista Gangetica, Jerd. This is Delphinus rostratus, Shaw, Hardw.
Susu, Sishuk, . . . BENG. | Susa, Sons, . . . HIND.
Gangetic porpoise, . . . ENG. | Sisumar, . . . SANSE.
Ganges, Jumna, Gogra, Brahmaputra.
Platanista Indi, Blyth, porpoise of River Indus.
Globiocephalus Indicus, Blyth, Indian Ca'ing whale, Bay of Bengal.
Cetodon macrocephalus, Blyth, Bay of Bengal, near Ceylon.

Fam. Balenidae or Whales.

Balenoptera Indica, Blyth, Indian fin whale, of Bay of Bengal, Indian Ocean.
Balæna mysticetus, Greenland whale, Northern Seas.
B. Japonica, Japan whale, of Japan and Northern Seas.
B. Australis of the South Seas.
B. antarctica of the South Seas.
Physeter simus, Owen, Euphysetes simus, Bay of Bengal.
Phocaena brevirostris, Bengal Bay.

SUB-ORDER, Sirenia, Herbivorous Cetacea.

Halicore dugong, Jerd., Dugong; Duyang trichechus, Erzl., Bly., F. Cuv.
H. cetacea, Illiger. | H. Indica, Desmarest.
Talla Maha, . . . SINGH.
Ceylon, Andamans, Malayana, Singapore, Marine lagoons of Malabar.
Halicore tabernaculi, Ruppell, Red Sea.
H. Australis, Australia.

See Cetacea.—*Jerdon, Mammals*, p. 15.

PORTAX PICTUS. *Jerdon.* The Nil-Gai.

Antilope picta, Pallas. | Tragelaphus hippelaphus, Ogilby.
A. tragocamelus, Pall.
Damalis risia, Sm., Elliot.
Maravi, . . . CAN. | Rojh, Nil, Lil, HIN., MAHR.
Gurayi, Guriya, GOND. | Manu-potu, . . . TEL.
Ru-i, Ro, HIND., MAHR.

The Nil-Gai belongs to the sub-family Antilopinae and family Bovidae. It is found throughout India from near the foot of the Himalaya to the extreme south of Mysore, but is most abundant in Central India and in the country between the Jumna and the Ganges. It does not occur in Ceylon or Assam, or in the countries east of Bengal. The male is 6½ to 7 feet long; at the shoulder, 4½ to 4¾ feet high; horns, 8 to 10 inches; and tail, 18 to 21 inches long. The male is of an iron-grey colour, lower parts white, head and limbs tinged with sepia brown. It frequents forests and low jungles, and associates in small herds of 7 to 20. It can be tamed, but is apt to be vicious at times. It was probably the Hippelaphus of Aristotle. It is comparatively rare, and is becoming more so every day. The country people are apt to confound it with the Sambur; but the localities frequented by the two animals are totally different. The Sambur is impatient of heat, and requires shade and deep cover; the Nil-Gai is indifferent to the sun at noon, and in the open plains it requires a good horse and a long run to come up with it. The Nil-Gai drops on its knees to feed, and attacks and defends itself by butting with the head. The Sambur, on the other hand, never kneels, and when irritated rises on its hind legs, and strikes with the forefeet. In Gujerat the Nil-Gai is found in the open, grassy plains; the herd marches in a line, the bull leading with 8 or 10 cows following.—*Jerdon's Mammals*, p. 273.

PORT BLAIR, the chief settlement in Ross Island, one of the Andamans.

PORT CANNING, a harbour 28 miles from Calcutta, at the Mutlah creek. About a million sterling was expended up to 1868, and a railway was formed, but it was not successful. The object was to avoid the perilous navigation of the Hoogly.

PORTER, SIR ROBERT KER, author of *Travels in Georgia, Persia, Armenia, Ancient Babylonia*, etc., in 1817-20, London 1821.

PORTO NOVO, a seaport town on the Coromandel coast in the South Arcot district, on the north side of the Vellur river, in lat. 11° 29' 25" N., and long. 79° 48' 13" E. It is famed in the history of South India for the complete victory Colonel Coote won near it at Metapolliam, on the 1st July 1781. Coote, repulsed by Hyder Ali in an attempt on Chellumbrum, was falling back on Cuddalore via Porto Novo, when his force of 7878 men was intercepted by Hyder's army, 60,000 strong. Porto Novo has never recovered the devastating effects of Hyder Ali's

invasion of the Carnatic in 1780. The Danes and the Dutch had each a factory here. In the early part of the nineteenth century large iron-works were established here, but did not prove remunerative.

PORTS. The following are the more important of those on the southern shores of British India:—Aden, Akyab, Alepi, Balasor, Bassein, Beypur, Bimlipatam, Bombay, Calcutta, Calicut, Cambay, Cannanore, Chittagong, Cocanada, Cochin, Coompta, Coringa, Dholera, Diamond Harbour, Gogo, Honawar, Kalingapatam, Kalyan, Karachi, Karwar, Madras, Mangalore, Masulipatam, Moulmein, Negapatam, Panwell, Ponani, Porbandar, Port Blair, Port Canning, Porto Novo, Quilon, Rangoon, Ratnagiri, Sadashighar, Sonniani, Surat, Trombay, Tuticorin, Vingorlu, Viziadrag.

PORT SAID owes its origin in Egypt to the Suez Canal. It lies at the western extremity of an island, which belongs to the narrow strip of land separating Lake Menzaleh from the Mediterranean. The port occupies an area of 570 acres, and has been excavated to a depth of 26 feet by dredging. It is protected by two massive piers, the eastern running for a mile out into the sea, and the western for $1\frac{1}{2}$ miles. The harbour is exposed to the risk of being choked up with the Nile mud, which is swept along the coast by a current flowing from the west. Both piers are constructed of blocks of artificial stone, each block weighing 20 tons. Population, about 9000, the French element preponderating. The inner harbour consists of three sheltered basins. The lighthouse, 164 feet in height, is one of the largest in the world.

PORTUGAL, a kingdom in Europe, with possessions in South-East Asia. It occupies the south-western portion of the Spanish Peninsula, and is situated between lat. $36^{\circ} 55'$ and $42^{\circ} 6'$, and between the 7th and 10th degrees of W. long. Greatest breadth, about 150 English miles, and greatest length about 355. The population in 1878 was 4,550,699, besides 2 millions in the colonies, and with a public revenue of about 4 millions; its army 32,000, and a navy of 45 ships. Since the end of the 15th century, it has held possessions along the E. and W. coasts of Africa and in the south of Asia from the Cape of Good Hope to Japan, and from A.D. 1500 to 1610 they controlled the whole commerce of all these eastern seas. Putting out of sight their great possessions in South America, they would appear at different times to have held the following places in the Indian Ocean:—

On the *east coast of Africa*, Melinda, Quiloa, Querimba, Sofala, Mozambique, and Mombas (expelled A.D. 1615).

In *Arabia*, Aden and Muscat (expelled by the Arabs A.D. 1648).

In *Persia*, Bussora and Ormuz.

In *India*, Diul or Dewal and Tatta on the Indus, Bandel, Diu, Daman, Assurem, Danu, St. Genes, Agaciam, Chaoul, Dabul, Bassacim, Salsette, Mahim, Bombay, Tanna, Caranja, Goa, Onoro (Honore), Barcelore, Mangalore, Calicut, Cranganore, Cochin, Quilon; on the east coast of India, Negapatam, Maliapur, St. Thomé, Masulipatam, and several other places on the Coromandel coast and Bengal.

In *Ceylon*, Manaar, Point de Galle, Colombo, Jafnapatam, and other places.

In *Further India*, Malacca, with factories at Pegu, Martaban, Junkseylon, and other places.

In the *Chinese Seas and Pacific*, Macao and the island of Formosa.

At the present day the Portuguese retain the coast of Eastern Africa between Delagoa Bay and Cape Dalgado. In India, Goa, Daman, and Diu, with a population under half a million souls, and in the far east, Macao in the China Sea, is their sole remaining possession. They settled there in 1557, and until 1848 paid for it a rent of 500 taels. The Portuguese mode of government and that of the Spaniards has been throughout based on the policy of establishing their religion and social views along with their political power. In Goa, conversions are now infrequent, the large body of European and Native clergy being more employed in parochial than in missionary work. But in India they surrounded themselves with partisans and converts, and made themselves a nation, and in the south of India they had at one time attained to great success. Their converts took the surnames of their leading rulers, and the names of many of the sixteen Portuguese captains-general have been handed down amongst the Roman Catholics of the Peninsula, where the names of de Souza, Pereira, Menezes, Albuquerque, Almeyda, de Mello, Mascarenhas, de Castro, are everywhere met with. To the Portuguese is due the honour of discovering practically the sea route to India by the Cape of Good Hope. Prince Henry the navigator (1394-1460), son of King John the Great of Portugal, had devoted his life to maritime and astronomical studies, and continued till his death to believe in the possibility of sailing eastwards.

Pedro de Covilham and Alfonso de Payva were ordered by King John II. of Portugal to travel overland to India, in order to obtain information regarding the commerce of the eastern seas. They set out from Portugal in 1487, and proceeded by Naples, Rhodes, Alexandria, and Cairo to Tor, on the Red Sea. There they heard of the great trade with Aden and Calicut. From Aden, Payva went into Abyssinia; but Covilham sailed in an Arab vessel to Cannanore, and thence to Calicut and Goa. He was the first Portuguese who reached India. He returned by Sofala to Egypt, where he met the Rabbi Abraham of Beja and Joseph of Lemaço, two messengers who had been sent by King John II. to inquire after his progress, and from them he learned the death of Payva. He sent a message to the king by them, to the effect that a ship coasting Guinea southwards would certainly round to the Eastern Ocean. Covilham then returned to Aden, and on to Ormuz and Abyssinia, where he was detained a prisoner until A.D. 1526. His information was acted on.

In 1444, the Portuguese had obtained from the Pope an ordinance bestowing on them the sovereignty over all the lands which had till then been discovered by them, and all that should be discovered as far as the Indies. And immediately after the discovery of America by Columbus, the Pope, by an edict of 4th May 1493, while confirming the king of Spain in the sovereignty of America, and strictly prohibiting all others from touching at any port 100 (afterwards 250) leagues westward of the Azores, declared that the Portuguese were to possess all eastwards of that line. Accordingly, on the 8th of July 1497,

an expedition, commanded by Vasco da Gama, sailed from the Tagus for India. The expedition was not in favour with the people, but King Emanuel, who in 1496 had succeeded John II., was determined to prosecute the project of Prince Henry. Prince Henry had been the Grand Master of the Order of Christ, and his hopes had been as much for the conversion of the heathen as for the extension of the commerce and dominion of his nation. It was in this spirit that the future acts of the Portuguese were, and continue to be, regulated; while the British, who at the present day hold sway over many places once dominated by the Portuguese, have followed the system of non-interference in religious and social matters. For when Cabral, in March 1500, left the Tagus in command of the second expedition, the sum of his instructions was to begin with preaching, and if that failed to proceed to the sharp determination of the sword. In the 16th century, they carried on a piratical crusade against every Muhammadan ship they could find, but their final ruin was brought about by Philip II. of Spain forbidding the Portuguese to continue commercial intercourse with the Dutch. Vasco da Gama rounded the Cape of Good Hope, and saw the east coast of Africa, on the 22d November 1497, and reached Calicut on the 20th May 1498.

A second expedition, consisting of thirteen ships and twelve hundred soldiers, under the command of Cabral, was despatched in 1500. On his outward voyage, Cabral was driven by stress of weather to the coast of Brazil. Ultimately he reached Calicut.

In 1502, Vasco da Gama sailed a second time to the east, with a fleet numbering twenty vessels. He formed an alliance with the rajas of Cochin and Cannanore against the Zamorin of Calicut, and bombarded the latter in his palace.

In A.D. 1504, nine ships sailed from Lisbon in three equal squadrons, under the respective commands of Alfonso de Albuquerque, of Francisco Albuquerque, and of Antonio Saldanha; the last was to cruise in the mouth of the Red Sea, the others were to proceed directly to India. Francisco Albuquerque arrived first, and made a considerable addition to his squadron in consequence of having fallen in with some of the ships belonging to Vincent Sodre. For some reason not explained, the two Albuquerques set sail for Europe, leaving only Duarte Pacheco, with 110 men, for the defence of Cochin. Pacheco was superseded in command by the arrival of Lopez Soares, with a fleet of 13 ships of larger dimensions than had ever before been built in Portugal, and Soares, after destroying Calicut and Cranganore and the Zamorin's fleet of 17 large vessels, provided with cannon, and carrying 4000 men, leaving four ships at the fort of Cochin, set sail for Europe with the remainder.

The next Indian armament sent from Portugal consisted of 22 ships, carrying in addition to the crew 1500 fighting men, under the command of Don Francisco Almeyda, who bore for the first time the proud title of the Viceroy of India. His arrival in India took place in 1507.

His son fell in a battle fought A.D. 1507 against the combined fleets of Cambaya (Gujerat), the Egyptian fleet (of 12 ships), and those of the Zamorin, off or at Choul, 23 miles south of Bombay,—the Portuguese loss being, according to their

own account, 81 men, while according to Ferishta no fewer than 3000 or 4000 Portuguese infidels were sent to the infernal regions.

Successive armaments on a great scale quitted Lisbon for the east. One of these, under Tristan da Cunha, consisted of 13 vessels and 1300 fighting men, cir. A.D. 1508. Another of 12 vessels, under Alfonso Albuquerque, after performing several exploits on the African coast, and effectually crippling the trade between India and the Red Sea, continued along the coast of Arabia, and, after capturing Muscat and several other places of minor importance, entered the Persian Gulf. He proceeded to attack Ormuz, but after a partial success was obliged to depart and proceed to Socotra. Returning thence, he was about to resume the siege of Ormuz, when he received intelligence that he had been appointed viceroy, and thereon proceeded to India. But, on arriving there, Almeyda refused to resign to him the insignia of office, and Albuquerque had to proceed under his command in the fleet that after destroying Dabul defeated the Turkish and Gujerat fleets. Returning thereafter to Cochin, he persisted in retaining the viceroyship, and sent Albuquerque as a prisoner to the fort of Cannanore, but eventually, A.D. 1510, resigned. Albuquerque, now (3d January 1510) fully installed, proceeded to attack Calicut, the greater part of which was laid in ruins. Proceeding to Goa, the city was at first voluntarily surrendered, but on an army sent by Eusuf Adil Shah appearing before it some four months subsequently, Albuquerque had to evacuate the place. He returned in the course of the year, and took Goa by storm, and shortly after declared his intention to make it the capital of Portuguese India.

On the 2d May 1511, he set sail from Cochin for Malacca, of which he took triumphant possession.

On the 18th February 1513, he appeared with a fleet of 20 sail before Aden. Failing to capture it, he proceeded into the Red Sea, and after remaining for some time at the island of Kameran, again passed through the Straits of Bab-ul-Mandab, and returned to India.

In March 1514, he made a third attempt on Ormuz, and succeeded in completely establishing the Portuguese supremacy there. In the two following years the Portuguese power was more firmly seated than before or since.

But on receiving intelligence that he was no longer viceroy, summarily dismissed to make way for his mortal enemy, Lopez Soares, grief killed him on the 16th December 1515. He was buried at Goa, but in 1566 his remains were transported to Lisbon.

Soares reduced Aden, took and burned Zeila, but failed in attack on Jeddah. In 1517 he made the king of Colombo tributary, and burned Berberah on the Somali coast.

In 1524, Vasco da Gama came out to the east for the third time, and he too died at Cochin in 1527.

In 1529, the towns of Bassein and Tanna were subjected. During 1530 to 1532, Surat, Gogo, Pati, Mangarole, and most of the other towns on the coast of Gujerat, were destroyed by the Portuguese. In 1532, Aden again became tributary. In 1534, Bassein was ceded to them. In 1538, St. Francis Xavier was sent to Goa to convert

the nations, and from there to Japan his success was unparalleled. From that time the Portuguese power in India rapidly decayed.

In Further India and China their progress was similarly brilliant, but temporary. At Malacca, 200 soldiers of Portugal utterly routed 15,000 natives, with artillery. In 1578, Malacca was again besieged by the king of Acheen, but the small Portuguese garrison destroyed 10,000 of his men, and all his cannon and junks. Twice again, in 1615, and for the last time in 1628, it was besieged, and on each occasion the Achinese were repulsed.

In China they made no progress, although they visited it twice during the reign of Ching-tih (1506-1522). In 1514, Raphael Perestralo, and a few years later, 1517, Don Fernand Perez d'Andrade, landed at Canton. Both these officers were well received by the mandarins at Canton, and d'Andrade was allowed to go to Pekin, where he remained as ambassador of Portugal, until a buccaneering fleet, commanded by his countrymen, committed such depredations on the coast that he was held to have been vicariously guilty of piracy, and, after having suffered imprisonment at the hands of Ching-tih, he was executed by order of the succeeding emperor, Kia-tsing.

The Dutch nation first came to the Eastern Archipelago as the servants of the Portuguese.

Ceylon was occupied by the Portuguese in 1596. Portuguese finally quitted Ceylon on the 24th June 1658, and were carried prisoners by the Dutch to Batavia. Portuguese and Mahrattas were at war in the early part of the 18th century. The war originated in the contest between members of the family of the Angria of Colaba, A.D. 1737. It ended in the loss of the Portuguese possessions of Salsette, Bassein, and the neighbouring parts of the Konkan, A.D. 1739. The Mahrattas admitted that they lost 5000 killed and wounded at the siege of Bassein.

The successes of the Portuguese along a coast line of 12,000 miles, from the Cape of Good Hope to the islands of the Archipelago, were to a large extent owing to the towns which they took having never before been attacked from the sea. But the names of the handful of brave and great men who for a short time were supreme on the seaboard, will be found under their respective letters.

Pedro de Covilham and Alfonso de Payva, 1487.
Bartholomew Diaz.
Vasco da Gama, 1497-1527.
Alvarez Cabral, 1500.
Alfonso de Albuquerque, 1504-16th December 1515.
Francisco Albuquerque and Antonio Baidanho.
Duarte Pacheco.
Don Francisco d'Almeyda, 1505-1508.
Sequeira, 1509.
D'Abreu, 1511.
Lopez Soares de Albergaria, 1517.
Raphael Perestralo, 1506-1522.
Don Ferdinand Perez d'Andrade, 1507.
Diego Diaz.

—Sir G. Birdwood; Beveridge, India; Bikmore's Tr. p. 22; Elphinstone; Findlay; Sir George Campbell; Hunter, Imp. Gaz.

PORTUGUESE MAN-OF-WAR. Sea nettle, Eng.; Galere, Fr. The Portuguese man-of-war, one of the Acalephæ, is the *Holothuria physalis*, Linn., the *Physalia pelagica*, Lam., also *Ph. carivella*, and *Ph. utriculus*. It has an inflated vesicle

or bladder, glowing in delicate crimson tints, which rises over and floats upon the waves, whilst the long tentacula, of a deep purple colour, extend beneath as snares for capturing its prey. The bladder is generally supposed to collapse in tempestuous weather, but Dr. Bennett says it always remains inflated. The tentacula sting.—Bennett, p. 5.

PORTULACA OLERACEA. Linn. Purslane.

Baklat-ul-hakima, . . .	ARAB.	Kari chira, . . .	MALEAL.
Buro, Lunia, . . .	BENG.	Turuk, Khurfah, . . .	PERS.
Mya-byeet, . . .	BURM.	Lonika, Lunia, . . .	SANSK.
Dooda-gorai, . . .	CAN.	Genda-kola, . . .	SINGH.
Ma-ch'i-hien, . . .	CHIN.	Paropou-kiray, . . .	TAM.
Kulfa, Lunia, . . .	HIND.	Karil-kiray, Cori-kiray, . . .	
Lunak, Lunyan, . . .		Pedda pael kura, . . .	TEL.
Kurfa, Khursa, . . .		Boddu-pavili kura, . . .	
Moncha, Kunder, . . .		Ganga pavili kura, . . .	

This is a common weed in India, and eaten by the Hindus, but cultivated by the market gardeners; used as a spinach, and in curries; almost tasteless; acts as a refrigerant and alterative in scurvy and liver disease. Seeds said to be vermifuge; in Cochin-China the seed is considered emollient and diuretic; considered by natives cool and dry, also aperient. Useful in disorders of mucous membrane, difficulty of breathing, and fevers.—Ainslie; Roxb.; O'Sh.; Jaffrey; Powell.

PORTULACA QUADRIFIDA. L.

Portulaca meridiana, Linn.
Illecebrum verticulatum, Burm., Rheede.

Baklat-ul-mobarik, . . .	ARAB.	Limak, Kaksha, . . .	PANSAB.
Nuniya, . . .	BENG.	Oopadyki, . . .	SANSK.
Chowli, Choli, . . .	DUKH.	Posserie, Passelie, . . .	TAM.
Choroli, . . .		Sanpel, Batali, . . .	TEL.
Creeping purslane, . . .	ENG.	Goddu pavili, . . .	
Nila chira, . . .	MALEAL.	Pedda pavili, . . .	

A small troublesome weed with fleshy leaves, used as greens; common everywhere. Fresh leaves, bruised, are prescribed as an external application in erysipelas, and an infusion given in dysuria.—Roxb.; O'Sh.; Jaffrey; Stewart.

PORTULACARIA AFRA is the Spekboom of the Cape of Good Hope, said to be the favourite food of the elephant. It is one of the numerous forms which confer a peculiar physiognomy on the vegetation of the colony.

PORUS was of the race of the Puru or Parura kings, to which in the time of Alexander two princely races belonged. They were the first purely Indian race known to Europe. Colonel Tod derives the name from Puar, once the most powerful and conspicuous tribe in India; classically written Pramara, the dynasty which ruled at Ujjain for ages. The Porus who ruled in the direction of Hastinapura offered a determined resistance to Alexander, with 4000 horse and 30,000 foot of the Kshatriya tribe. He was sovereign of the country near the Jhelum, and opposed Alexander's attempt to cross that river. Alexander drew up his troops at a bend of the river, 14 miles west of the modern Chillianwalla, and crossed during a stormy night. The chariots of Porus stuck in the muddy bank of the river, his elephants refused to face the Greeks, and, turning round, trampled down his soldiers. The son of Porus fell early in the battle, and Porus was wounded and fled, but afterwards yielded to Alexander, and aided him. Alexander built Bukephala, near the modern Jalalpur, on the west bank of the Jhelum; and Nikæa, the present Mong, was on the east bank, on the site of his victory over Porus. Bukephala was named after Alexander's charger, which was killed in the battle.

POSA.

The dominions of Porus were all situated between the Hydaspes (Jhelum) and Ascesines (Chenab), and his immediate neighbours were independent of him, and mostly at war with him. On the north, his territory extended to the woods under the mountains, but it did not include the whole country between the Hydaspes and Ascesines, for besides other tribes there were the Glaucanices or Glausæ, who had 37 large cities, whom Alexander put under Porus. On the east, between the Ascesines and Hydraotes, he had another Porus who was his bitter enemy. To the S.E. of him were the Cathæi and other independent nations, against whom he assisted Alexander. To the south were the Malli, against whom Porus and Abissares had once led their combined forces, with those of many others, and had been defeated. His western boundary was the Hydaspes. Beyond that river, in the centre, was his mortal enemy Taxiles, on the north of whose dominions was Abissares, an independent prince, whom Arrian calls king of the mountain Indians; and on the south, Sopithes, another independent sovereign, in whose territories the Salt Range lay. In the time of Augustus Cæsar, a letter in Greek praying for assistance was received at Rome from a king of this name on the Indus. See Chandragupta; Hindu; Kama.

POSA of Assam, black-mail.

POSHKHUR, a holy lake in Malwa. See Palliwal.

POSHIM-WANLOO, a wandering Teling tribe of mendicants on the banks of the Bhimah, who move about with a small temple with an idol called Poch-amma, the small-pox goddess.

POST. HIND. Poppy capsules; also a narcotic liquor prepared by boiling the capsules in water with jagari; also the rind of any fruit, the bark of any tree, and the skin of any animal.

POSTANS, CAPTAIN T., Bombay army, was Political Agent in Upper Sind from 1839 to 1842. He was author of an Account of Sind, translated from Persian historians in Bl. As. Trans. vii. p. 297; Account of Jain Temple at Badrasir, and Ruins of Bodra Nagri in Cutch, *ibid.* p. 431; Account of Girnar, *ibid.* p. 865; on the Rivers Nile and Indus, Lond. As. Trans. vii. p. 273; Personal Observations in Sind; Route through Cutch, etc., Lond. Geo. Trans., 1844; Memoir on Shikarpur, Bl. As. Trans., 1841; Trade in Cutch, Bhooj, with Africa, Bom. Geo. Trans. i. p. 169; Report on the Munchar Lake, and Aral and Narra Rivers, *ibid.* iii. p. 122; on the Kamphatir of Dawodhar in Cutch, Lond. As. Trans. v. p. 263; Account of the Temple of Somnauth. Mrs. Postans wrote on Cutch and Western India, London 1839.—*Dr. Buist.*

POSTKIN, a body coat, a fur cloak or coat, a sheepskin coat or vest, much worn in Afghanistan. The sheepskin is prepared with the wool on. After being curried, and the wool cleaned with soap and combed, the skin is stretched on boards by means of nails at the corners, with the inner surface uppermost. This is daily, four or five times, smeared over with a thin moist paste, composed of equal parts of fine wheaten and rice flour, with which is mixed a little finely powdered salt. It is then cleared of the paste, again washed and scraped, and laid out in the open air to dry, and again put on the stretcher, and has rubbed on it a tanning mixture of pomegranate rind, alum, and

POTASH.

red ochre, or alum alone. It is then allowed to dry for a few days; the tanning mixture is then scraped off, and the skin firmly rubbed with a wooden roller, and it is rendered soft and pliant by crumpling it between the hands, shaking and beating it with thin twigs. It is one of the most important of the industrial occupations of the people of Kandahar, Ghazni, and Kābul, and of late years has been largely increased for export to the Panjab, where the native army of British India had adopted it as a winter dress; also to Peshawur.

Coats are made by the tailor cutting the skin in strips of 24 inches long, and 4 or 5 inches wide, and stitching these together. Three kinds of coats are made,—the postincha, short and without arms, and the postaki, which reaches to the knees, and has long sleeves, for which five or six skins are needed; also the postin, which are very large, loose, cumbersome cloaks, reaching from head to feet, with long, wide sleeves reaching beyond the fingers. They cost from 1 to 50 rupees, and the woolly side is worn next the body, which harbours vermin. Khosai poshto are cloaks made in Kandahar of white felt, worn by the Afghan peasants.—*MacGregor*, p. 48; *Burton's Scinde*, ii. p. 40.

POTADAR. MAHR. A money-changer.

POTAIL. In the village system of the Mahratta countries, the potail is the chief magistrate of the village. There are often two to four potails in a village, not always of the same caste; for instance, the village of Khanpur, zillah of Nandair, has four potails, two Mahratta, a Canarese-speaking Lingaet, and a Kulkarga. There are a few Brahman and Muhammadan and Pariah potails, but a Christian potail is unknown. In the Canarese-speaking country, the village head is called Goura or Gouda.

POTALA, a great Buddhist monastery at Lhasa. See Tibet.

POTAMOGETON CRISPUS. *Linn.* Sawal and Chusbal, LADAKH. Not uncommon in the Panjab, and apparently abundant at 9000 to 11,000 feet in Ladakh. It is probably one of those plants used in refining sugar here as elsewhere. In Ladakh it is used as fodder.—*Stewart's Pan. Pl.* p. 241.

POTAMOGETON TUBEROSUS. *Roxb.* Found immersed in extensive masses in ponds, lakes, and receptacles of fresh water in Bengal during the dry season, chiefly when in flower in February; it rises so near to the surface as to allow the little spikes of flowers to emerge completely. It is much employed in the N.W. Provinces in the process of clarifying sugar.—*Roxb.* i. p. 452.

POTASH, Potashes, Pearl-Ash.

Shih-kien, . . .	CHIN.	Carbonate of potash, <i>ENO.</i>
Hwui-kien, . . .		Khar, Jowkhar, . <i>HIND.</i>
Potake, . . .	DAN.	Manu-uppu, . <i>TAM., TEL.</i>
Jhar ka Namak, .	DUKH.	

Potash is a commercial term commonly applied to an impure carbonate of potash, obtained by the incineration of wood, lixiviating the ashes in barrels, first with cold and then with hot water, filtering the ley, and evaporating it to dryness in an iron pot. Potash is of great importance in the arts, being used in the soap and gas manufactures, the rectification of spirit, bleaching, in medicine, and for other purposes. It is procurable in most Indian bazars. No manufacture of potash upon an extensive scale has ever been

attempted in India. The common source of it is the ashes of land plants, and the English market is supplied from Russia and America. A source of pearl-ash, and one very interesting to us, seeing the enormous quantities of saltpetre all over the country, is nitrate of potash and charcoal. The Hindus of the Malabar coast, as well as the Singhalese, who do not use Over Munnoo, or impure carbonate of soda, in bleaching and washing linen, employ for these purposes the ashes of burnt vegetables (chiefly cocoanut leaves), which can only in this way be of service from the potash they contain. Dioscorides describes it as ashes of vine-twigs *Cineris lixivium* (Pliny xxxviii. c. 51). The Arabs are usually supposed to have been the first to make known this alkali (al-kali). In countries where forests are abundant, as N. America, Russia, Sweden, Poland, wood is piled in heaps and burnt on the surface of the ground, in a place sheltered from the wind. The ashes which are left consist of a soluble and insoluble portion. The soluble part is made up of the carbonate, together with the sulphate, phosphate, and silicate of potash, and the chlorides of potassium and of sodium; and the insoluble portion of carbonate and sub-phosphate of lime, alumina, silica, the oxides of iron and manganese, and a little carbonaceous matter that had escaped incineration. In China, it is prepared by burning composite, polygonaceous, and other inland plants. The ash is made into a thick mass by the addition of some kind of meal, and is sold as an alkali for raising bread, cleaning clothes, &c.

The Bitartrate of Potash, or Cream of Tartar, must have been known ever since wine has been made from the grape, in the juice of which it exists. During the fermentation of wine, sugar disappears, and alcohol is formed, and the salt not being soluble in this, is deposited on the bottom and sides of casks, as a crystalline crust, which, according to the colour of the wine, forms either red or white tartar or argol. It is the *Fæx vini* of Diosc. v. c. 13. Its nature was determined by Scheele in 1769. It is largely purified both at Montpellier and at Venice. In commerce it is in white crystalline crusts formed of clusters of small crystals aggregated together, which are hard and gritty under the teeth, dissolve but slowly in the mouth, and have an acid and rather pleasant taste.—*Royle; Hindu Med.* p. 97.

POTASH, NITRATE OF. See Saltpetre.

POTATO.

Yang-shu, Tu-yu, . . . CHIN.	Batata, PORT.
Ho-lan-shu,	Kartofel, RUS.
Aardappel, DUT.	Patata,
Pomme-de-terre, . . . FR.	Ruta innala, . . . SINGH.
Kartoffel, GER.	Patatas manchegas, SP.
Puttata, Alu, HIND.	Patata,
Pomi-di-terra, Patata, IT.	Potates, Jordparon, SW.
Ubi, Kantang, MALAY.	Wallarai kelangu, . . TAM.
Seh-zamini, Alu, . . . PERS.	Ooralay gadda, . . . TEL.

The potato plant, since the early part of the 17th century, has been introduced into Europe, Africa, Asia, and Australia. Sir John Malcolm claims to have introduced it into Persia about the early part of the 19th century. It has been grown by the Burmese since 1862. Potatoes were sent to Kabul by Captain Claude Martin Wade from Ludhiana, and planted by the Amir. Baron Hugel introduced them into Kashmir, and sent them thence into Little Tibet. In British India, the planting has been extending since the early part

of the 19th century, but the root is still (1882) only used by Europeans. The Dutch and the Roman Catholic priests introduced it into China, where, also, Europeans are the chief consumers. It is now largely grown in Mysore, and in various parts of the Dekhan, by planting the tubers.

The potato plant belongs to the natural order Solanaceæ, and is closely related to the tobacco plant, belladonna, henbane, nightshade, and other poisonous narcotics. In it, however, the poisonous qualities are confined to the parts above ground, including any of the tubers exposed to the light in growing. It is a native of South America, and is still found wild in the mountainous regions of Chili, Peru, and Buenos Ayres, and has also been found in Mexico and in the Southern States of N. America, but was probably introduced there by the first Spanish settlers. Samples brought from the Carolinas were first grown by Sir Walter Raleigh in the south of Ireland in 1586. In that country, where both soil and climate are favourable to its growth, it rapidly came into favour; but in England, Scotland, and France, a prejudice long existed against it, owing to the poisonous nature of the other plants of the same order, and for a century and a half it was only cultivated in flower gardens. Even in 1725, the few potato plants in the gardens about Edinburgh were left in the same spot from year to year. In 1728, however, Thomas Prentice, a Scotch day-labourer in Stirlingshire, began to cultivate the plant for food, and sold to his neighbours what he did not require for his own use. They bought willingly, and he soon made a small fortune, and lived for sixty-four years a happy witness to the effects of the blessing which he had been instrumental in conferring upon the country. In England, the potato was taken into favour much earlier, and its field culture rapidly extended as its excellent qualities became known. In France it was not until a time of scarcity during the revolution that its culture became general.

In British India, potatoes should be planted in rows about 1 foot apart, and 5 or 6 inches deep; the space between each row not less than a foot. The ground should be light and loamy, and as little infested with white ants as possible. They can be planted at the commencement of the rains in a spot where the water cannot lodge, which may be done by keeping the end of the channel between the ridges open. At this season, plant on the top of the ridges, and do not water them unless necessary, as too much water makes them run to stalk. If the ground have not been well ploughed previous to the rains setting in, and all the weeds destroyed, the chance is the crop will fail; but should the ground be ready, cut the potatoes intended for the seed into pieces, taking care that each slice has at least two eyes in it; as you cut the slices, whilst fresh, dip the cut side of each into wood-ashes, and let them dry well, which takes place in a few hours; this prevents the white ant's attacks. Plant each slice from 9 to 12 inches apart, and place by the side of each a small clove of garlic, which in some measure tends to prevent the attack of a large grub very destructive to the plant. Dr. Riddell thinks this insect's eggs must be in the manure when added to the soil, and he had little doubt but that if the manure was previously worked up with the soil two or three times during the hot season,

POT BARLEY.

and exposed to the heat of the sun, the eggs would be destroyed; or the same purpose might be effected with a little fresh lime. He is sure the caterpillar does not travel to the plant. The finest crops in the Dekhan are sown from the beginning of October to the latter end of December, and this last crop will be found the most productive. Fine crops of potatoes have been grown where hemp has been first sown, and when about 2 feet high ploughed up into the ground. If, when the potatoes are about flowering, any of the stalks wither, carefully open the earth and look for and destroy the grub, which you may be certain is feeding upon it. When these grubs are very numerous, it is necessary to search all the drooping plants daily. A bag with a small quantity of asafetida can be placed in the water-course as a remedy when the plants are being irrigated. Another insect deposits its egg on the stalk of the plant. In the rains a small caterpillar cuts its way into the stalk above the ground, on which the plant immediately droops; the remedy is to remove the whole. At all seasons keep the stalks well earthed up, and let the potatoes have a moderate supply of water, the season being the guide. One year, Dr. Riddell raised a very fine crop of potatoes during the rains, by sowing them on ridges, and only watered them at first in consequence of want of rain; they were sown in the beginning of July, and a few taken up in the latter end of September. Some of the potatoes, weighed from five to seven ounces, and were equal to any seen grown on the hills. In the latter end of August, he tore off shoots from the lower end of the stalks when they were abundant, and planted them in rows, the same distance as for seed; and in November four or five large potatoes were found produced by each stalk, the size of a duck's egg. This plan he strongly recommends when not able to get fresh seed after the rains.

Potato - Starch, or potato - arrowroot, also called potato-flour, forms a white and somewhat glistening powder, which crackles like genuine Maranta arrowroot when pressed between the fingers. It is sometimes called British or English arrowroot, and is prepared by rasping and grinding the well-cleaned tubers of *Solanum tuberosum* into a pulp.

Sweet Potato (*Batatas edulis*) is cultivated largely in tropical countries for its root, which contains much farinaceous and saccharine matter. The tubers are usually about the size of potatoes, but several have been seen from Grand Canary weighing 6 to 7½ lbs. each; and one in Madeira is said to have weighed 32 lbs. after having been left in the ground two or three years. Although not known to have been collected in the wild state, it is believed by M. A. de Candolle to be of American origin.

Telंगा Potato, *Amorphophallus campanulatus*, Karna Kalangu of the Tamils, esteemed a very wholesome food. The dark-coloured flowers have a very curious appearance. — *Rid.*; *Canadian Naturalist*; *Vigne's Personal Narrative*, pp. 173, 174; *Lowe's Madeira Flora*.

POT BARLEY, or Scotch barley, the grain of barley deprived of the husk by a mill.

POTE. HIND. Glass beads laden with red dye. Pote-ka-Luch'ch'ha, HIND. A necklace of strings of black glass beads.

POTSTONE.

POTEE. TAM. Round red cakes of cotton. An inferior kind is impregnated with the red colouring matter of the prickly pear, and a better kind is made by impregnating the cotton with the kaysur flower, the weeping *Nyctanthus arborescens*, but the best is from the safflower, *Carthamus tinctorius*. The Potee forms a ready and durable substitute for red ink.

POTENTILLA, a genus of plants of the order Rosaceæ. *P. atrosanguinea*, of Europe, is a herbaceous plant, handsome when in flower, and easily raised from seed, or by dividing the roots. *P. denticulosa*, Royle, is common in the plains of Northern India in the cold season, at elevations of 4000 to 5000 feet in the Himalayas; two other species are found in the Neigherries. *P. discolor*, Jacq., appears to be frequent in Kanawar, Spiti, and Ladakh, from 11,500 to 15,000 feet. The under surface of the leaves is covered with a fine dust, which, when the plant is shaken, causes violent sneezing.

Potentilla Inglisii, Royle; var. *P. fruticosa*, L. Spang, Jha, Merino, CHEN. | Pinjung, Penma, LADAKH.

This is not uncommon in the higher parts of the Chenab basin, where its fragrant leaves, etc., are used as a substitute for tea. It also grows in Spiti and Ladakh, occurring in the latter up to over 10,000 feet. It is browsed by sheep.

Potentilla Nepalensis, Hook., Rattanjet, SUTLEJ. This is not uncommon in the Panjab Himalaya at 6000 or 7000 feet. Its reddish root is exported to the plains as one of the roots called rattanjet, but the roots of *Vinca rosea*, L., and *Oenothera echinoides*, L., receive the same name. They are employed in dyeing wool, and are officinal, being considered depurative, and they are used externally in the Yunnan system, the ashes being applied with oil to burns.

Potentilla Salesovii, Steph., Shoar of the Panjab, grows in Lahul, Spiti, and Ladakh at 11,000 to 12,000 feet. It is browsed by sheep.

Potentilla tormentilla, Πενταδύλλον μίλαν, Diosc., Theophr. A native of Europe, and officinal; the root is very rich in tannic acid. — *Drs. Stewart*; Royle; Riddell; O'SA.

POTHI. MAHR. A book; a Hindi or Sanskrit book.

POTHOS, a genus of Araceæ, or arum tribe of plants.

POT-METAL, an alloy of copper and lead. It is improved by the addition of tin, and the three metals will mix in almost any proportions. Zinc may be added to pot-metal in very small quantity; but when the zinc becomes a considerable amount, the copper takes up the zinc, forming a kind of brass, and leaves the lead at liberty, which in a great measure separates in cooling. Zinc and lead are indisposed to mix alone, though a little arsenic assists their union by 'killing' the lead as in shot-metal; antimony also facilitates the combination of pot-metal, — 7 lead, 1 antimony, and 16 copper mix perfectly at the first fusion, and the mixture is harder than 4 lead and 16 copper, and apparently a better metal. — *Holtzapfel's Mechanical Manipulation*; Rohde's MSS.

POTSTONE, Balpam, HIND., is found in various parts of India, on the western coast, at Turreya Carey, and Chitore, in the Madras Presidency, and in the ghat country betwixt the Phoonda and Ram Ghats. It was known to the Romans, and is described by Pliny as used in the

manufacture of vessels for cooking purposes,—hence its name. The mineral possesses a glistening pearly lustre and greyish tint; it contains 49 per cent. of silica, 30 of magnesia, and 6 of alumina. The stone is prepared for use by reducing it to something like the form, size, and shape desired, by a cleaver, a panned hammer, or strong knife. When a cavity is meant to be circular, it is bored out by being held against the working spindle of a single-centred native lathe. This enables them to be held on by the chuck, when they are chucked and finished in the lathe in the ordinary way. Potstone speedily hardens and darkens by exposure to the air; it absorbs grease, oil, or fatty matter freely; it is stronger than ordinary earthenware, stands heat better, and is pretty extensively used for culinary purposes. That sold in the Bombay bazar is mostly brought from Goa.—*Cat. Ex.*, 1862.

POTT or Poti, a name of Buddha.

POTTA DELL. SINGH. A soft, coarse, open-grained, light Ceylon wood.

POTTERY.

Poterie, Fr. | Alfaro, Sp.
Töpferarbeit, Ger.

The art of making vessels of baked earth is also known as ceramic work, from the Greek *κεραμος*, clay. It has been known to all races from the earliest times, and some of them 4000 years ago attained to great perfection. The art is alluded to in the book of Job. The potters of Samos were celebrated in the time of Homer. Great quantities of pottery have been found in Egyptian tombs, which to all appearance had lain unopened since the time of the Pharaohs; and in the south of Persia, urns containing remains of some very ancient race. In all the cairns of the Peninsula of India, articles of pottery are found, although of the races who used this form of burial there is no record. The fragments of pottery everywhere found among the ancient cities of India, as in those of other parts of the world, afford the best record of the early races of man on the earth.

While metal is liable to corrosion, and wood to decay, pottery remains almost unalterable, and has thus been the means of discovering to later ages many points respecting the history, religion, customs, and manners of the ancients, which must otherwise have remained unknown. There is a general agreement in the nature and uses of ancient pottery, but at the same time a distinctive character belonging to each country and nation. The rude and simple urns of the early inhabitants of Britain; the more carefully fashioned pottery of the Romans; the simple unglazed earthenware of ancient Greece; the more elaborate forms called Etruscan, of which the finest specimens are, however, attributed to the Greek potters of the Isle of Samos, so celebrated for the delicacy and perfection of their workmanship; the red and black potteries of India; the black and white potteries of North America, the latter interspersed with fragments of bivalve shells; the irregularly formed and fanciful pottery of South America,—all these possess a distinct individuality. The word porcelain existed in the French language in the fourteenth century, and consequently anterior to the introduction of Chinese porcelain into Europe. The potter's art is represented in all its stages on the tombs of Thebes. The mixing of the clay was effected by kneading with the feet,

after which a mass of convenient size was formed with the hand, and placed on a wheel of very simple construction, and turned with the hand. During its revolution the forms of the vessel were made out with the fingers; the handles were afterwards affixed; the objects were placed on planks to dry, then carefully arranged in trays, and carried to the oven. Ornamental designs were traced with a wooden or metal instrument previous to the baking.

The earliest use of pottery was doubtless that of ordinary drinking vessels, but there was also a religious employment assigned to earthen vessels, which has been the means of preserving them for the inspection of after generations. In vases of baked earth the ashes of the dead were frequently deposited, and even where the practice of burning the dead was not followed, still various earthen vessels have been found placed at the head and feet of the skeleton, and sometimes hanging on pegs along the sides of the tomb.

In China it was not till the 3d or 4th centuries of the Christian era that fine materials were employed, and that some degree of perfection was attained. When the Chinese had acquired a certain amount of skill and perfection, they appear to have rested entirely satisfied with the results, and to have continued producing it without variation for ages. So exclusively were the Chinese the manufacturers of porcelain, that it acquired the name of their land, and became universally known (on its introduction to Europe in 1518) as china.

The Japanese have acted differently from the Chinese, and have produced porcelain-ware of the finest fabric, and in the highest artistic forms. The origin of the art in Japan is referred to the pre-historic era of Oanumuchi-no-nikoto, and the inventor, Oosei-tsumi. But in B.C. 29, when an empress of Japan died, and, according to immemorial custom, a selection from among the slaves of her household was doomed to death, so that she might not descend unattended into the grave, there arose in the province of Idsoumi the worker in stone and pottery whose name was Nomino-Soukouno. He made images of clay, and, taking them to the widowed emperor, persuaded him to bury them with the body of the august lady, and to spare the lives of her favourite servants. Thereafter the cruel custom was discontinued, and Nomino-Soukouno was allowed, as a title of honour, the designation Haji—the artist in clay. It seems probable that for 1500 years or more pottery only, and not porcelain, was made in Japan; but in the time of Henry VIII. of England, about 50 years before porcelain was first made in Europe, an artist who had travelled in China settled at Hizen, and instituted there a manufactory of the finer ware. But the earthenware of Japan is of such a quality that it has sometimes, apparently, been described as porcelain. Raku-ware, which figures in Japan at ceremonial tea-parties, closely resembles china, but is nothing more than lead-glazed earthenware, introduced by Ameya, a Korean, about the year 1500. It is said that Ameya's descendants, in the eleventh generation, still pursue the trade of their ancestor at Kioto,—such is the permanence of Japanese institutions.

From time immemorial, the potter has formed an essential member of the Hindu village com-

munity. Pottery is made in almost every village, from the small vessels required in cooking to the large jars used for storing grain. In tasteful forms, the pottery of India is not surpassed by that of any other country, although its potters have much to contend with in the opinions of the Hindus as to ceremonial impurity, which prevent them using articles defiled by the touch of other castes. Hindus never use a polluted vessel, so no great expense will be incurred by them; thus encouragement is wanting to improve the nature of their pottery. In the exhibition of Indian pottery in 1851, numbers of the best judges greatly admired its elegant, even classical, gracefulness of form.

The glazed pottery of Burma, of which two very large jars were sent in 1851, has long been known for its glaze not being affected by acid. But the Buddhists of Pegu and Burma have no such notions of social uncleanness as the Hindus have adopted, and their great Martaban jars are used by themselves, and are largely exported. Muhammadans also are free from such views, and variously-coloured encaustic tiles have been used for the domes of some of the tombs near Dehli and Agra, as well as in Southern India in the tombs of Golconda. The tiles are in general character precisely similar to, although not so carefully made as, the oriental tiles known as Persian, which adorn the old mosques of Egypt, Syria, Turkey, and Persia; but the mode of decoration upon many of them is remarkable, the figures being executed in *pâte-sur-pâte*. Some have inscriptions impressed or incised on the surface, while on others it is reserved on the dark-blue ground. The colours used upon them are a rich copper-green, a golden-brown, dark and turquoise blue, etc. Some of this pottery is precisely similar in composition to that produced in Egypt 4000 years ago. The antiquary, the artist, and the manufacturer may do well to study these wares. As in their silk and woollen fabrics, their metal work, and other manufactures, an inherent feeling for, and power of, producing harmony in the distribution of colour and in surface-decoration, exists among the orientals, which Europe should study and imitate, if it cannot copy.

Sind pottery is of two kinds,—encaustic tiles and vessels for domestic use. In both cases the colours are the same,—turquoise-blue, copper-green, dark-purple or golden-brown, under an exquisitely transparent glaze. The usual ornament is a conventional flower pattern, pricked in from paper, and dusted along the pricking. The tiles, which are evidently of the same origin as those of Persia and Turkey, are chiefly to be found in the ruined mosques and tombs of the old Muhammadan dynasties; but the industry still survives at the little towns of Saidpur and Bubri, and Sind ware is made at Hyderabad, Kurachee, Tatta, and Hala. Glazed pottery is made in Sind and parts of Upper India; the turquoise-blue, as painted on a paste beneath a glaze, might have been unearthed in Egypt or Phœnicia. Of the specimens which have been exhibited at times, a small bottle painted in blue on white, is the same as the ancient wares of Thebes; a beautiful rich brown jar, painted with flowers in panels, by means of a white earth or 'slip' applied on the surface of the red clay in the consistence of thick cream (the *pâte-sur-pâte* of Sévres), the whole glazed over with yellowish-brown, shows the figures, of pale colour, in slight

relief on the darker ground; a low vase with similar ornament on plum colour, and a cylindrical jar of brilliant green was a fine example. This mode of decoration occurs on the heavy bronze-coloured and dark-blue porcelain ascribed to Persia, and is also used in China. A few years since it was a novel application at Sévres, and Messrs. Minton have made a successful use of this method in the decoration of porcelain.

The Hindus are equally successful with the white and black ware, and with basket ware. Some of it is ornamented with red and blue colours; and with grey and copper-coloured mica of various degrees of fineness, rubbed on the clay, the potter gives a metallic effect on the surface of the piece.

The clays which are generally employed in the more populous part of British India, contain so much oxide of iron and carbonate of lime, that the vessels melt into a slag at a temperature little above that of redness. Deposits of a black stiff clay, containing much vegetable matter, occur in some districts; vessels made with it sustain a higher temperature. Clays capable of bearing great degrees of heat have, however, been discovered in different parts of India. As one great object is to have porous vessels for cooling water, the ordinary clays answer sufficiently well for this purpose; and some of the ware, as that of the tortoise-shaped, exposes a larger surface to the air. The essential ingredients in every kind of clay, and consequently in every article in pottery and porcelain, are silica and alumina. No clay or artificially prepared pottery or porcelain paste is ever free from admixture with other ingredients, such as iron, lime, potash, and other minerals. But by purging the paste of the accidental ingredients, the iron, lime, etc., we exalt those properties which render it fit for the preparation of fictile articles. An intimate mixture of silica and alumina with water acquires, by exposure to a high temperature, the required degrees of hardness and density; but for many purposes it is necessary to impart a certain degree of fusibility, to which end other substances are used in various proportions, capable of forming vitrifiable double silicates with alumina and silica. These substances, diffused through the paste formed by the simple silicate of alumina, in some cases with silica in excess, in others with excess of alumina, greatly contribute to the cohesion and hardness of the mass. The various mixtures employed in the different branches of the manufacture were thus classified by M. Dumas:—

Silica, alumina.	• • •	Ideal type.
Silica, alumina, lime.	• • •	Earthenwares, crucibles,
Silica, alumina, oxide of iron,	• • •	bricks, tiles, encaustic
Silica, alumina, lime, oxide of	• • •	tiles, and common
iron,	• • •	pottery.
Silica, alumina, potash,	• • •	Hard porcelain.
Silica, alumina, soda,	• • •	Soft porcelain.
Silica, alumina, magnesia,	• • •	Piedmont porcelain.
Silica, alumina, baryta,	• • •	Stoneware.

It was at one time supposed that the kao-lin porcelain clay of China was peculiar to that country, but clays of the highest value for all forms of ceramic work are to be found in India, and the white goblets of Arcot and the light-coloured pottery of Madras show that clays perfectly free from iron can be obtained.

By far the best clay Sir William O'Shaughnessy met with was procured by Captain Halsted at

Singapore. It occurs there close to the beach, and can be brought to Calcutta for six annas the maund. The clay is found in thick strata. The detached masses are of a pink tint; broken into, they contain nodules of perfectly white earth. They absorb water eagerly, and yield an exceedingly soft, ductile, and tenacious paste. Uparomi or upper wash may be described as a strong brown tenacious or clayey loam. The best is found at a village called Monad, ten cos west of Chinsurah, and at Panchdowkie, eight cos S.W. of Kulna. The raw earth is sold at four annas the maund, but the prepared uparomi is worth three rupees per maund. Three months are required for its proper preparation, and ten seers of uparomi are procured from each maund of the raw earth. There are also two other sorts of varnishing earth prepared from this uparomi, which are called gad or sium, obtained at the bottom of the washing vessel, and majaree or middle sort. All these prepared specimens—belutti, uparomi, gad, and majaree—are obtained by washing, great care being taken to select the water of a very pure tank, no doubt to avoid saline mixtures, which would act as fluxes. The belutti when prepared is a mixture of the yellow ochre and alumina in slightly variable proportions.

The ancient *potter's wheel* is the instrument with which the Hindu works, and while it revolves, with the aid of his naked hands he fashions vessels of elegant forms, many of which have been admired as being of classical shapes, and some would appear almost as if they were of Etruscan origin; but there is no reason to believe that the Hindus have ever had anything but their own unerring taste to guide them. This beauty of form is equally conspicuous in the pottery of Sewan near Patna, as in that of Azargarh or of Ahmadabad, of Mirzapore, or of Moradabad. Some of it is remarkable also for its extreme thinness and lightness, showing the great skill of the artist, and making it difficult to understand how it kept its shape when in a plastic state, as it is not known that the turning-lathe is used to give a finish to any of the articles. The painted pottery of Kotah and the gilt pottery of Amroha have also been admired. The handles and the various ornaments of the Ahmadabad pottery are no doubt attached, as in Europe, by means of a slip. It is a horizontal flywheel, the frame of wood, the rim heavily laden with clay, 2 or 3 feet in diameter, weight 60 to 80 lbs., and is put in motion by the potter's hand, assisted by a stick. Once set spinning, it revolves for from five to seven minutes with a perfectly steady and nearly true motion. The mass of clay to be moulded is placed on the centre of the wheel, and the potter squats before it on the ground. This machine has doubtless several defects, but it answers its purpose perfectly. The native furnace is simply an excavation in the ground of variable depth, in which the ware is placed layer by layer, with dry reeds, straw, etc., and all are burnt together.—*Juries' Reports of Exhibitions in India and Europe since 1851; Royle, Arts of India; O'Shaughnessy, Bengal Dispens.; Imp. Gaz.* See Ceramic Manufactures; Earthenware; Porcelain.

POTTINGER, ELDRED, a lieutenant in the Bombay Artillery. He was sent to report on Central India by his uncle, Sir Henry, then

Colonel, Pottinger. He travelled by Shikarpur and Dehra Ismail Khan to Peshawur and Kabul, disguised as a horse-keeper, thence to Herat as an Indian Syud, through the rude country of the Amak and Hazara. The Persian army, after taking Ghorian, appeared before Herat on the 22d November 1837? and the following day the siege fairly commenced, and lasted till the 9th September 1838? He was the great stay in preventing its capture. When war with Afghanistan was declared on the 1st October 1838, Lieutenant Pottinger was appointed Political Assistant to Mr. Macnaughten. He died at Hong-Kong.

POTTINGER, SIR HENRY, Bart., a Bombay military officer, who was on the embassy of Sir J. Malcolm to Persia, afterwards Political Agent in Cutch and Sind, Plenipotentiary in China, Governor of Hong-Kong, Cape of Good Hope, and Madras; author of *Travels in Beluchistan*, 1816.

POTUR, a well at Jafna in Ceylon, about 30 feet in diameter, and sunk to a depth of 144 feet. Its surface is of fresh water; but deeper, it is brackish and salt; and on plunging a bottle to the extreme depth, the water it brings up is highly fetid, and gives off bubbles of sulphuretted hydrogen gas. Its level rises and falls a few inches once in every twelve hours, but it overflows its banks, and is never reduced below a certain level, however much water is abstracted. The natives believe that the well communicates with the sea at Kieremalie near Kangesentorre, a distance of 7 miles, from which they affirm that a subterranean stream flows inwards.

POULTRY.

Tayr; Tuyur, . . .	ARAB.	Murgh, . . .	PERS., HIND.
Hona; Fiederkræ, . . .	DAN.	Aves domesticae, . .	PORT.
Gevogette,	DUT.	Kurz,	RUS.
Volaille,	FR.	Aves de Corral, . .	SP.
Gefügel,	GER.	Fjaderfa,	SW.
Pollame,	IT.	Tawuk-mawuk, . .	TURK.

To keep poultry is an abomination to all but the lowest of Hindus. This abstinence is deeply to be regretted, as fowls would keep down the number of snakes.

POUZOLZIA VIMINEA. *Wedd.* A fast-growing shrub of Kamaon, Nepal, and Assam. Its bark is made into ropes, and the leaves are eaten by the Lepcha.—*Gamble.*

POVINDAH are a trading tribe on the N.W. frontier of British India, conducting all the mercantile transactions between British India and Central Asia. They are pastoral in their habits, but portions of their clans carry goods to Dehli, Cawnpur, Benares, and other parts of India, and to Ghazni, Kalat-i-Ghilzai, Kabul, Kandahar, and Herat. Their chief clans are the Lohani, Nasar, Niaz, Daotani, Mian Khel, and Karoti, and these have subdivisions.

They bring to India dried fruits, drugs, spices, silks, woollens, pashminas, felts, horses, cattle, and camels, and carry away British and Indian manufactures of every kind. Camels, of which they have great numbers, are their ordinary carriage. Their imports and exports at the Indus ferries of the Dehra-i-Ismail Khan district in 1867-68 was stated by them to be 25 lakhs of rupees; in 1868-69 they named 29½ lakhs; and in 1869-70, 38 lakhs; but 50 lakhs, or half a million sterling, is the amount at which the British authorities estimated the value of the trade conducted by the

Povindah. They are wealthy, have fine horses, and can muster about 14,000 fighting men. They are in reality soldier merchants. Between Kābul and Kattywaz their Kafilā or caravan can travel separately; but from Kattywaz to the British frontier they have to travel in one great mass for mutual protection. They move in bodies of 5000 to 10,000 strong, heavily armed, under an elected chief with the title of khan, marching like an army, with advanced guard and rear guard and flanking parties, in some parts with daily skirmishes, occasionally pitched battles, and when halting at night sentries are posted and pickets thrown out. In a region so full of wars, the perseverance with which they continue their successful enterprise merits all praise. Major Edwardes said he had hardly ever seen a Povindah who had not one or more wounds on his body; and the loss of an eye, broken noses, scarred skulls, lame legs, and mutilated arms are almost as common as freckles in England.

Their great enemies are the Waziri tribe. The Karoti section of the Povindah, to the west and north-west of the Waziri, have 1500 tents. Their climate in winter is very severe. In spring they live on milk, ghi or clarified butter, cheese, and kurut or dried buttermilk. They are very fair for Asiatics. The Nasar section are the strongest of the Povindah clans. Their numbers are not accurately known, and the estimates made have ranged at from 1850 to 12,000 families. They are migratory, dwelling in summer among the Tohki and Ohtak clans of the Ghlizai tribe, and moving in winter to the Dehrajat. They depend chiefly for food, clothing, and tents on their flocks and herds, and trade less than other sections. Their sheep and camels are numerous. They are small of stature, ugly, and black, are rude and squalid in their general appearance, and barbarous in their manners. The Lobani section have three branches,—the Pani, Daulat Khel, and Mian Khel. The first two and part of the Mian Khel have settled to agriculture. The remainder of the Mian Khel are traders. In summer the men visit Bokhara, Samarcand, and Kābul, a guard being left to protect the women in their felt tents. In the winter they move through the Gomal pass to the Dehrajat, when some of them proceed to Lahore and Benares, returning in April in order to revisit Karabagh and Panah.

The Povindah are not the sole travelling merchants of Central Asia. The Parancha are a tribe of merchants, who are said to have come from Baghdad, and settled in various parts of the frontier districts of Kohat and Peshawur. They claim to be descended from Nushirwan. They trade from Bombay and Calcutta to Bokhara, taking tea, indigo, chocolate, and cloths, starting about September. From Bokhara they start afresh for Yarkand, Tashkand, and Orenburg, and go also to the fair at Nijni Novgorod, which they call Makrain, and they bring back unwrought silk, Tilla (6s. 8d.) and Ratiska, or Russian coins.

The Ushtarana Afghans inhabit the outer hills opposite the extreme south of the Dehra Ismail Khan district. They have become largely agricultural; but they still trade, and bring, through the Kui Bahara pass, into British territory, camels, goats, sheep, donkeys, bullocks, wool, honey, and ghi, taking back grain, piece-goods, shoes, blankets, indigo, sugar, sugar-candy, and raw sugar. On

the Sikhs rebelling in 1848, 200 infantry of the Ushtarana, under Fattah Khan, accompanied Captain Edwardes to Mulan.

The Gandapur tribe inhabit the Daman-i-Koh, in the Dehra Ismail Khan district. They too have largely settled down to agricultural pursuits, but are also traders. Fifty or sixty go every year to Afghanistan, and four times that number to India; but this has had little effect in softening their manners, which are rude.

The Baber of the Dehra Ismail district has many sections. They are brave, but much scattered, and in the Dehra district could collect only 600 or 700 fighting men. They were considered by Captain Edwardes the most superior race of all the Trans-Indus districts. They are the fairest of all the tribes. They had a blood-feud with the powerful Mian Khel, whom they almost rival in commerce.

In Arabia, Persia, Asiatic Turkey, Afghanistan, and Baluchistan, the nomade pastoral races are continually on the move in and to their winter and summer quarters. But from the most ancient times merchants have been traversing those regions. Ezekiel, who lived B.C. 574, in the 27th chapter tells us that the Ashurites made benches of the ivory brought from the Chittim islands; that the men of Tarshish traded with Tyre in silver, iron, tin, and lead; Javan, Tubal, and Meshech brought slaves and brass vessels; horses and mules were brought by the house of Togarmah; the men of Dedan trafficked in ivory, ebony, and precious clothes for chariots; and spices, precious stones, and gold were the merchandise sold in Tyre by the men of Sheba and Raamah. At the present day, Hindu traders and merchants are seen in every village of Central Asia, to the north-west as far as the shores of the Caspian Sea; but such are permanently resident in their respective localities, the products of the several countries being brought to them by the travelling mercantile tribes.

The British Government has granted the Povindah a total remission of the heavy duties which were imposed by the Sikh Government on all merchandise brought from the north-west, Kābul, Khorasan, Persia, etc.

The total number of those who encamp on British territory has been estimated at 25,000 souls, half of whom belong to the Nasar section. The passes from which they generally emerge are the Gomal, Manjhi, Shekh Haidar, and Zarkani. Considering the wild and independent life the Povindahs lead, they are marvellously orderly and well-behaved when dispersed in British territory, travelling from one end of India to another. When thus scattered, and unable to continue the precautions adopted while in the passes, they have suffered losses on the Tank and Kolachee borders, in spite of the numerous posts, and of the civil and police arrangements.—*N.W. Frontier*, pp. 545, 546.

POWAR, of Nimbalkur, in the Mahratta country, claim to be descended from the sacred fire of Mount Abu.

POYAKHAKRI, in the Tamil country, heritors of lands which their ancestors in remote times reclaimed, who pay to Government either a warum or grain, or teeriva commutation rent.

POYKAI ALVAR, a native of Kanjippuram, contributed a hundred stanzas to the *Nalayira Perapantam*.

POYYAMOLI PULAVAR, a Tamil poet, who is said to have lived in the reign of Vanangamudi Pandiyan. He wrote an erotic poem, *Tangsaivamkovai*, in illustration of the rules of Narkavirasa Nampis Akapporul.

PRABASHA, a hill near ancient Kausambi, on the Jumna, about thirty miles above Allahabad, in the doab of the Ganges and Jumna.—*Cunningham*; *Tr. Hind.* i. p. 350.

PRABHAL, in lat. 18° 58' N., long. 73° 14' E., in the Konkan, five miles N. of Chock. The fort is 2320 feet above the sea.

PRABHASA, a place of pilgrimage on the coast of Gujerat, near Dwaraka, and also near Somanatha.—*Dowson*.

PRABHAVAL, SANSK., from Prabha, splendour, brightness. The glory figured around the heads of Hindu gods.

PRABHU. SANSK. A lord or master, from which comes the Burmese word *Prah* or *Phra*. A term applied to the masters of Hindu sects. *Prahu* is the word from which the clerking caste of Bombay have been called *Purvoe*. *Maha-pra'hu*, great lord.

PRACHETASA, ten sons of Prachinabarhi, and great-grandsons of Pritu. In Hindu mythology, Vishnu granted them the boon of becoming the progenitors of mankind. They took to wife Marisha, daughter of Kandu, and Daksha was their son.

PRACHYA, the people east of the Ganges, the *Prasii* of the Greeks.—*Dowson*.

PRADAKSHANA, SANSK., is the *Deursio* of the Romans, the *Deasil* of the Scotch, the *Tiompoth Desiol* of the Irish, from *Tompadh*, turning, and *Deisol*, to the right. It is a turning to the right in conformity with the sun's shadow.

The Swastika symbolizes this idea of circumambulation. It is the cross + with the crampons † at the end of its arms. It is a sign of good luck. Turning in the contrary way is called *wither-shins* by the Scotch, the German *wider-shins*. The Hindus also apply the term to the circumambulation of their temples to be seen daily everywhere, the worshipper keeping the right hand towards the temple. Their six years' pilgrimage from the source to the mouth of the Ganges and back again, is also a *Pradakshana*; and the term is also applied to going round the aisle or circumambulatory passage surrounding the inner wall of their temples.

In the mode of trampling out grain from the ear, called *Daen* and *Dawan*, HINDI, in which bullocks are tied together, and made to circulate from right to left, the words are supposed to be derived from *Dahina*, the left side.—*H. Elliot*.

PRADHAN. SANSK. Chief, principal, an eminent person under the Mahratta government; the common title of the eight chief civil and military officers. Written and pronounced *Purdhan*.

PRAD'HAN or *Andh*, a Gond tribe.

PRAD'HANA, in Buddhism, is nature or concrete matter. The *Pradhanika* were worshippers of universal nature as the sole First Cause of all things, an atheistical creed, preceding the teaching of *Sakya Muni*.

PRADHOSHURATA, a fast observed by the *Saiva* sect of Hindus.

PRADYUMNA, the incarnate Indian cupid, a son of Krishna and Rukmini, called *Kama* in N. India and *Man-matha* in S. India. The Hindu mythology has many fables about him, and one of

these is that when six days old he was stolen by the demon *Sambara*, and thrown into the ocean; there he was swallowed by a fish, which was afterwards caught and carried to *Sambara's* house, and on being opened by *Maya-devi* or *Maya-vati*, she discovered the beautiful child. The *Pradyumna-Vijaya*, a drama by *Sankara Dikshita*, relates the victory of *Pradyumna* over *Vajra Nabha*. See *Sri Sampradaya*.

PRÆSTI, an ancient people governed by *Portikanus*, or *Oxykanus*; their capital *Mahorta*, probably the *Oskana* of *Ptolemy*. The name of *Prasti* given by *Curtius* might, according to *Wilson*, be applied to a people occupying the thals or oases of the desert. He refers to *Prastha* or *Prasthala*, as derived from *Sthala*, the Sanskrit form of the vernacular *Thal*, which is the term generally used to designate any oasis in Western India.—*Cunningham's India*, p. 259.

PRAGA, the modern Allahabad, built by the race of *Puru*; hence its name *Puru-raga*, the city of the *Prasii*.

PRAGATHA etymologically signifies a kind of song (from the root *Ga*, sing).

PRAGWAL, a Brahmin who conducts the ceremonies of the pilgrimage at Allahabad.

PRAHLADA, a devotee of Vishnu, saved from the hands of *Hiranya* by Vishnu in his incarnation as *Narasimha*. *Dowson* says *Prahlada* or *Prah-rada*, a son of *Hiranyakasipa*, and father of *Bali*, who adopted the worship of Vishnu.—*Dowson*.

PRAHU. MALAY. A ship or lugger; also written *Prow*. The boats of the Straits of *Malacca*, *China*, *Archipelago*, are the *prahu*, *sampan*, *lorcha*, *pukat*, and *tong-kong* or *ting-king*. In the Eastern Archipelago, the generic name for a boat or vessel, large or small, is *prahu*, a word almost naturalized in the European languages. It belongs equally to the Malay and Javanese languages, and from these has been very widely spread to others, extending as a synonym to the principal Philippine tongues. The usual name for a canoe or skiff, both in Malay and Javanese, is *sampan*. The large vessels which the natives of the Archipelago used in war or trade were called by them *jung*, which is the word corrupted *junk* that Europeans applied to the large vessels of the Chinese, of which the proper name is *wang-kang*. For a square-rigged vessel or ship, the natives have borrowed the word *kapal* from the *Teling* people. Names vary with forms of vessels and the uses to which they are put, and these again differ with nations or tribes so as to be innumerable. The most common pirate vessels made use of among the floating communities from the Straits to the south-eastern groups, are the *penjajap* and *kakap*, with *padukan*, and Malay boats of various size and construction.

The *penjajap* is a *prahu* of light build, straight, and very long, of various dimensions, and carrying usually two masts, with square *kajan* sails. This boat is entirely open, except that aft is a kind of awning, under which the head-man sits, and where the magazine of arms and ammunition is stowed away. In front it carries two guns of greater or less calibre, of which the muzzles peer through a wooden bulwark, always parallel to the line of the keel. *Penjajap* of large size generally carry, in addition to these, some swivel pieces, mounted along the timber parapet; while boats

of inferior tonnage are armed only with two lelah, elevated on a beam or upright. From twenty to thirty rowers, sitting on benches well covered with mats, communicate to the vessel with their short oars a steady and rapid motion, the more swift in proportion as the prahu is small. Large ones, therefore, are often left hidden in some creek or little maze of islets, while the light skiffs, flying through the water, proceed on their marauding errand.

The kakap prahu is a small light boat, provided with a rudder oar, but with no other oars or sculls. It carries only one mast, with a single quadrangular sail. Like the penjajap, it is built of very buoyant timber, the planks being held together by wooden pins, and lashed with rattans. The pirate never goes to sea with a kakap alone, and the voyager may be sure, whenever he describes a kakap, that a penjajap is not far behind, moving along perhaps in the shadow of the high coast, or lurking behind some island, or lying within the seclusion of some woody creek. Eight or ten of the best fighters are usually chosen to man these light skiffs, which remind us of those flying prahus of the Ladrões described by a French voyager in a note to Sonnerat. In calm weather, the pirates row in these buoyant galleys along the shore, or mount the small rivers, confiding in their agility, and knowing well that if surprised they may fly into the woods, bear their little skiff with them, and launch it again at some spot unknown to their pursuers.

The paduakan are native vessels having a single mast in the form of a tripod, and carrying a large lateen sail of mat. They are from twenty to fifty tons burden, and of great beam, with lofty sides, and little hold in the water. They are steered by two long rudders, which are lifted up when the vessel is moored or passing through a shallow.

The ordinary prahus made use of by the Malay pirates at the present day are from eight to ten tons burden, very well manned, and exceedingly fast. Usually they are armed in the bows, centre, and stern with swivel pieces.

A second-class Illanun pirate prahu of Mindanao carries a crew of about 60 men. It has a stage or platform suspended to the mast, with grappling hooks attached to the end, which is used as a bridge for boarding a prize.

The first-class Illanun pirate prahu of Mindanao carries a crew of 100 men or thereabouts. In this description of vessel, the tripod mast, the two after feet of which work on hinges, is used as a bridge in boarding. In May 1843, the English whaler *Sarah Elizabeth*, Captain Bellinghurst, while at Amfuang, with 2 officers and 14 men on shore cutting spars, was attacked by 5 large and several smaller Illanun prahus, the crews of which, after killing, taking, or dispersing the party employed on shore, boarded the ship, the captain and the remainder of the crew, who were taken by surprise, escaping to sea in the whale-boats. The pirates, after plundering the ship, burnt her to the water's edge, in which state she was found by three other whalers that had been met with by Captain Bellinghurst in the offing, and had accompanied him for the purpose of rescuing his ship from the pirates. A full account of this transaction will be found in the *Moniteur des Indes* for 1847-48, pp. 34, 35, by Jankpeer Comets de Groot, who was during several years Resident

of the neighbouring settlement of Rhio, and afterwards secretary-general to the Colonial Department of Holland.—*Kolff's Report*, 1831; *Earl's Voyage of the Dourga*, note 89; *St. John's Archipelago*, ii. p. 182; *Sonnerat, Voyage*, p. 139.

PRAIRIE GRASS of Australia is the *Bromus unioloides*, *Humboldt*.

PRAJA or Panja. SANSK. Lit. progeny, offspring, subjects, people. The praja of Koch-Bahar are cultivators almost in a state of serfdom. In Cuttack, the barber, washerman, fisherman, weaver, leather-worker, and tari-gatherer are classed as praja, and often sold themselves and families into temporary slavery. Prajapat, a king. Prajapati, progenitors of mankind; in the Veda the term was applied to Indra, Savitri, Soma, Hiranya-garbhā, and other deities. In Menu to Brahma; it is also given to Menu-Swayambhuva, and also to the ten rishi or mind-born sons of Brahma, fathers of the human race,—Marichi, Atri, Angirasa, Pulastya, Pulaha, Kritu, Bhṛigu, Nareda, Vasishtha, Prachetas, or Dakṣa. Prajapatya, SANSK., the work of a prajapati.—*Wilson; Dowson*.

PRAJAPATI, a Hindu sage who dwelt at Hingula. He is mentioned in several Puranas. He taught that God is invisible, though possessed of form, and that final beatitude consisted in absorption into the Great Spirit.—*Ward*, iv. p. 45.

PRAJNA, in Buddhism, means wisdom, understanding, or foreknowledge. The author of the *Ashta Sahariska* thus addresses Prajna: 'Thou mighty object of my worship! Thou Prajna art the sum of all good qualities, and Buddha is the guru of the world.' The author of the *Puja Kand* thus addresses Prajna: I make salutation to Prajna Devi, who is the Prajna Paramita (Transcendental Wisdom), the Prajna Rupa (multi-form), the Nir Rupa (formless), and the universal mother.

Prajna Devi is deified Nature or Diva Natura, and the same as Dharma. In the physiological mythology of the Buddhists, the universal mother in the Kameshwari temple at Gowhatti in Assam is represented by the Yoni, which is there a triangular stone, tri-kon-akar-jantra. 'Adi Prajna or Dharma is the Prajna Devi, the Prajna Paramita, the Prajna Rupa, the Nir Rupa, and the universal mother. The wise make no distinction between thee and Budh. When all was Sangata, Prajna Devi was revealed out of Akas (space) with the letter U. That Yoni from which the world was made manifest is the tri-kon-akar-jantra.' In the midst of the jantra or tri-kon is a binda (point or cypher); from that binda Adi Prajna revealed herself by her own will. From the sides of the triangle, Adi Prajna produced Budh and Dharma and Sangha. Adi Sangha, Amitabha, by virtue of his Santa Jayan, created the Budhi Satwa named Padma Pani, and committed to his hands the lotus, the type of creative power. From Padma Pani's shoulders sprang Brahma's forehead, Mahadeo his two eyes, the sun and moon, from his mouth the air, from his teeth Saraswati, from his belly Varuna, his knees Lakshmi, his feet the earth. From the union of the essences of Apaya (Adi Budha) and of Prajna (Adi Dharma) proceeded the world, which is Sangha, represented by the letter M.

PRAKRIT or Prakrita is a term given to

dialects of the Sanskrit; it is the common, the enchorial, and not the perfect language. In this sense the common dialect of any spoken language is a Prakrit. Prakrita means derived from a model. The ancient Prakrit dialects were those forms of the speech of the Aryans which were commonly used by the masses. The earliest show five groups,—the Maharashtri, spoken round Ujjayani or Avanti in Malwa, perhaps including S. Rajputana and the present northern Mahratta country. Next the Sauraseni, spoken in Sarasena, in modern times the country round Mathura; thirdly, the Magadhi, the vernacular of Behar; fourthly, the Paisachi, whose exact locality is not defined; and fifthly, the Apabhramsa or corrupt dialect, perhaps in Sind and Western Rajputana. In the Hindu dramas, kings and Brahmans speak Sanskrit, but those of inferior position speak in different Prakrits. The Prakrits have received careful study. Prakrita-prakasa, a grammar by Vararuchi, was translated by Professor Cowell.—*Dowson*.

PRAKRITI. SANSK. Nature, crude matter, primary creation, matter as opposed to spirit; also the goddess of nature. The sakti or female energy of any Hindu deity. Pradhana is crude matter.

PRAMANIK, in Bengal, one of the village authorities; a headman amongst the Hindu castes, from the Sanskrit Pramanika.

PRAMARA, properly Paramara, one of the four Agnicula Rajput tribes. Of their thirty-five saccæ are—

Mori, of which was Chandragupta and the princes of Chitore prior to the Gehlot.

Soda, Sogdi of Alexander, the princes of Dhat in the Indian desert.

Sankla, chiefs of Poogul, and in Marwar.

Khyr, capital Khyralu.

Oomra and *Soomra*, anciently in the desert, now Muhammadans.

Vehil or *Bihil*, princes of Chandravati.

Maipawut, present chief of Bijolli in Mewar.

Bulhar, northern desert.

Kaba, celebrated in Saurashtra in ancient times; a few yet in Sirohi.

Omuta, the princes of Omutwarra, in Malwa, then established for twelve generations. Omutwarra is the largest tract left to the Pramara. Since the war in 1817, being under British interference, they cannot be called independent.

Rehar, *Dhoonda*, *Soruteah*, and *Hurair*, Grasia petty chiefs in Malwa.

The Pramara, though not, as the name implies, the chief warrior, was the most potent of the Agnicula, and acted an important part in the history of India in the middle ages. They sent forth thirty-five saccæ or branches, several of whom enjoyed extensive sovereignties. The world is the Pramara's, is an ancient saying, denoting their extensive sway; and the No-kot maroost' halli signified the nine divisions into which the country from the Sutlej to the ocean was partitioned amongst them. Maheshwar, Dhar, Mandu, Ujjain, Chandrabhaga, Chitore, Abu, Chandravati, Mhow, Maidana, Parmavati, Omrakot, Bekher, Lodurva, and Puttan are the most conspicuous of the capitals they conquered or founded. Not one remnant of independence exists to mark the ancient greatness of the Pramara; ruins are the sole records of their power. Of all their pos-

sessions, the prince of Dhat, in the Indian desert, is the last scion of royalty; and the descendant of the prince who protected Humayun, in whose capital, Omrakot, Akbar was born, is in very humble position. Among the thirty-five saccæ the Vehil was eminent, the princes of which line appear to have been lords of Chandravati, at the foot of the Aravalli; but of the dynasties issuing from the Agnicula, many of the princes professed the Buddhist or Jain faith to periods so late as the Muhammadan invasion. Maheshwar was the ancient seat of the Hya dynasty. The Mori race, whose leader Chandragupta, as is supposed, opposed Alexander, was a Takshak, and the ancient inscriptions of the Pramara declare them to be of the race of Tusta and Takshak.—*Colonel Tod's Rajasthan*, i. pp. 92, 93.

PRAMATI. SANSK. From Pra, prep., and Mati, understanding. Pramathesa, lord of the five senses, title of Mirra, traced to Prometheus. *As. Res.* iii. 327, vi. 506, 510.

PRAM LOCHA, a celestial nymph, sent by Indra to beguile the sage Kandu from his devotions.—*Dowson*.

PRAN, in Hindu belief, a spiritual element, of which there are twelve. The Hindu believes that on the clearness and firmness of his spirit at the last moment, when all is growing dim before him, hangs his chance for the world beyond. His life ebbs away; the eleven pran, or spiritual elements, gliding from him, ascend the precipitous banks of the dark Bhaosagar river. The twelfth pran—the spirit of life—still flutters within him. The eleven forerunners, as they stand on the awful brink, survey beneath a vast chaos of animal shapes and forms. If the twelfth which they have left behind can remain placid and calm, the eleven may have a brief moment's respite to choose from among the ghastly throng the form into which they shall migrate. The choice made, the angel of death from behind precipitates them into the abyss, where, joined by their twelfth mate, they enter the chosen tabernacle. And thus, with a last struggle, the spirit passes away.—*Pioneer*.

PRANA. SANSK. Breath of life. In the Atharva Veda it is personified, and a hymn is addressed to it.

Pranam, a Hindu form of salutation, consisting of a slight inclination of the head and the application of the joined hands to the forehead.

Pranayama, from Prana, life, and Ayama, a coming. The Hindu devotional exercises of pranayama, or breathing through either nostril alternately, and then closing both during the repetition mentally of certain formulæ. It is performed by three modes of suppressing the breathing, called rechaka, puraka, and kumbhaka.—*Dowson; Hind. Theatre*, p. 195.

PRANALIKA is a gutter or spout for draining off the water poured on a lingam.

PRANDHA-BRAHMANA, one of the eight Brahmanas of the Sama Veda. It contains 25 sections.

PRANGOS PABULARIA. *Lindley*.
Fitrasulium, Fitura, PUSH. | Prangos, PUSHTU.
Petrasoleum, | Komul,

This plant grows south from Iskardo, in Western Ladakh at 10,000 feet, in parts of Kashmir at 5000 to 6000 feet. It is found above Vernag, where Moorcroft also says he saw it, and in Afghanistan,

in the high land round Ghazni, about 7000 or 8000 feet (Bellow), and near Maidan, close to Kabul, at 6000 feet, and towards Hajiguk, perhaps 12,000 feet (Moorcroft, who calls it Romai). Bellow brought at least one other species of Prangos from Afghanistan. This plant constitutes excellent fodder for cattle, fattens quickly, and destroys the 'liver fluke,' *Fasciola hepatica*, of sheep. Royle considers it one of the plants which yielded the Silphium of Alexander's historians. Moorcroft, in Tibet, found it employed as winter fodder for sheep and goats, and frequently for neat cattle; and, writing from the neighbourhood of Draz, he praises the Prangos hay plant. Attempts to introduce it into Great Britain were unsuccessful; and it is probable it will only succeed and be valuable in a climate similar to that where it is found indigenous. It is highly valued in the cold and arid region of Tibet, where it is indigenous. It is found in Tibet, and also most abundantly on Abatong, a low trap hill in the valley of Kashmir; but there it was not so vigorous as in its Tibetan habitat. Dr. Falconer is of opinion that its importance has been much over-estimated. The Prangos will be valuable only in countries devoid of good natural pasturage, and of which the climate is favourable to its growth. In Kashmir, it is used in decoction to cure the rot in sheep. The leaves are used as fodder for sheep; they are rather heating. The native name, *fitrasulium*, is probably a corruption of the Greek name of parsley. Lieut. A. Burnes, crossing in the direction of Alexander's route, found this plant, the Prangos, greedily cropped by sheep. The *fitrasulium* seed from this or another species of Prangos is used as an aphrodisiac.—*O'Sh.* p. 369; *Moorcroft*, v. p. 179; *Jam. Ed. Journ.* xiii. 873; *As. Res.*; *Royle's Pro. Res.*; *Powell*, i. p. 352; *Stew.*

PRANHITA, the name of the united streams of the Wardha and Wainganga up to their junction with the Godavery. On the Pranhita and Godavery river, the Mahratta and Teling races meet.

PRAN-NATH, a Hindu reformer who lived in the 17th century in Bundelkhand, and founded the sect that bears his name. He was of the Kahatriya caste, lived to the beginning of the 18th century, and was patronized by Ch'hatrasal, raja of Panna in Bundelkhand. His followers are sometimes called Dhami, from Dham, a name of the Supreme Spirit, or Paramatma. They have no idols. His treatises, 14 in number, are in Hindi verse. The doctrines are monotheistic, and are taken from the Koran. He composed Mahitarial, with a view to combine the Muhammadan and Hindu religions. They eat together and admit the gods of each other's religions, but do not make any other departure from the customs of their ancestors.

PRAN-PRALAP. There arose in Nadiya, in Bengal, in the beginning of the 16th century, a Hindu reformer who was destined to wield immense influence on the masses. Chaitanya flourished during the time of Kasinatia, and when Sayyid Husain Sharif of Mecca reigned in Gaur under the title of Sultan Alu-ud-Din Husin Shah, Sharif of Mecca. It was when Luther was thundering against the indulgence and other abuses of the Christian church, that Chaitanya preached a new doctrine. That doctrine was the efficacy of Bhakti or faith as contra-distinguished from works. It was an innovation on the Vedic system, which

inculcates specific religious duties and the performance of ceremonies and acts. He taught that all men are capable of participating in the sentiments of faith and devotion, and that the members of all jati or castes became pure by such sentiments. He maintained the pre-eminence of faith over caste. The mercy of God was according to him boundless, and not circumscribed by the restrictions of tribe and family. He declared that Krishna was Parmatma or the Supreme Spirit, prior to all worlds, and both the cause and substance of creation. In his capacity of creator, preserver, and destroyer, he is Brahma, Vishnu, and Siva. Chaitanya became the founder of the largest religious sect in India, mustering nine to ten million souls, and fortified by an elaborate organization. Its disciples are to be found in almost every village in Bengal. They include some of the wealthiest and most influential families, as well as a host of poor and obscure men. Having obtained the sympathy and support of a large class, Chaitanya openly declared it was his mission to go forth and preach the love of Krishna as the one thing needful for salvation. But the Krishna of Chaitanya was not the son of Debaki, the intended victim of his uncle the tyrant Kansa, the sojourner in Brindaban, the companion of cowherds, the lover of Radha, the favourite of milkmaids and flower women, the terror of husbands, and afterwards the conqueror of Kansa and king of Dwarka; but the Creator of the universe, and the God of truth, justice, mercy, and love. His Krishna was the great and original Spirit, the author of creation, and the giver of all good. The age of Kasinatia and his successors was eminently favourable to the reception of the religious tenets Chaitanya offered to it. The country had undergone great political and social changes. The character of the Hindus had been moulded during some time by Muhammadan conquests, Muhammadan intercourse, Muhammadan laws, and Muhammadan literature. Their minds were at this time fermenting with religious longings, to which the doctrine of Bhakti inculcated by Chaitanya answered in many ways. A more practical religion than Vedantism, and a purer religion than Bhavanism, was eagerly looked for. It is therefore not to be wondered at that the religion of Chaitanya soon took root in Nadiya, which reverberated with the name of Krishna. Young men and old men of that city gathered round him; among them was Adaitanand, who was to him what the Baptist had been to the greatest religious reformer. He addressed them all in a tone of authority and affection, telling them that Krishna was the Saviour, and that they must love him with all their hearts and with all their souls. His preaching was generally heralded by convulsions and fainting fits. This phenomenon was called by his disciples Pran-Pralap, and continued for hours. During its continuance he forgot all mundane affairs, and exclaimed ever and anon Krishna, Krishna. This ecstatic state of Pran-Pralap was attended with mystic sighs and songs of Haribol. It was contagious among his disciples, and became a conspicuous trait of the new sect. Chaitanya was a mystic. Eating but little, and caring nothing for the animal man, he was able to maintain a state of continued excitement. This cerebral and muscular debility contributed in no inconsiderable degree to bring about those

alternations of deep sorrow and intense joy which told so much upon his audience, and by means of which he swayed tens of thousands. Chaitanya thought or rather felt that the first and greatest of all works was faith in Krishna. From this all other works must spring. He announced this as a mighty message of joy, a message that thrilled through the hearts of his hearers. He preached that the Chandala, whose impurity is consumed by the chastening fire of holy faith, is to be revered by the wise, and not the unfaithful expounder of the Veda. Again, 'the teacher of the four Vedas is not my disciple. The faithful Chandala enjoys my friendship; to him let it be given, and from him be received; let him be revered even as I am revered.' Religious rites and ceremonies were in his opinion not essentially important, but the appreciation of them by the generality of mankind, and their adaptability to the spread of religious tenets, were fully realized by him. With a view to perpetuate distinctiveness of his sect and society, and establish an indissoluble bond of union, he insisted on his followers submitting to the initiatory rite of the Mantra. It consisted in the guru or spiritual guide whispering in the ears of the Sishya (disciple) the mystic words 'Kling Krishna.' Another observance enforced by Chaitanya among his followers was the eating of the prasada by them together. A common meal has always been understood to cement and ratify relations of friendship. The brotherhood of the Vaishnava sect was symbolized in the prasad. It was a communion where all the followers, without distinction of caste, were admitted on equal terms. There was the learned Naiyaik as well as the illiterate Chasa, the Muhammadan Rais as well as the Muhammadan Mahout, the Kulin Brahman and the Kulin Kayastha, as well as the aboriginal Bagdi and the excommunicated Chandal, all participating in consecrated rice and dal and malpua. It was a manifestation of an intimate fellowship between those who shared in this common meal. It is now manifest that one of the distinguishing features of Chaitanya's theocracy was the universal character of the sect he founded. That sect was recruited from all classes of the Hindu as well as the Muhammadan community. No one who desired to enter was refused. To all who knocked at the door, admittance was granted. Chaitanya kept an open house, and his guests represented all classes, not only of society but of humanity. Chaitanya was most child-like in disposition and character. He was essentially guileless and simple-minded, but a most large-hearted man; and it was in his preaching that he poured out the wealth of that heart. He became a king of men on the Bedi or pulpit, which constituted his throne. His sermons were to the Hindus of Bengal what those of Savonarola were to the Florentines. Like the Italian reformer, he was fervid and forcible. Chaitanya was fond of travelling, and became an itinerant preacher. In the course of his peregrinations he came to Ramkali, situated in the suburbs of Gaur, the then capital of Bengal. He delivered there a magnificent sermon. Striking the harp and hymning the praise of Krishna, he touched a chord which resounded and vibrated through Bengal. His utterances were aglow with intense fervour. Thousands of people came to hear him, and the

sensation he made was so great as to attract the attention of the king Sayyid Husain, who deputed an officer to inquire into the matter. The officer reported that the noise had been made by a Sanyasi, and that it was not worth while taking further notice of the matter. But he continued to preach, and all classes of men from all parts of the great city crowded to Ramkali. Among those who had come to hear him preach were two Muhammadan brothers, Dabir and Khash, holding high employ in the court of Gaur. They were, in fact, ministers of Sayyid Husain, and enjoyed his entire confidence. They were enraptured with the eloquence of Chaitanya, and became converts to the doctrine of Bhakti; they longed to see him in private, to learn at his feet the tenets of the new faith. Accordingly they went to his cottage at midnight, and thus addressed him: 'Purifier of the fallen, low in descent and occupation, we are afraid of speaking our minds to thee. Saviour of Jagai and Madhai, have mercy on us. Of M'hecha descent, these sinners are incomparably more odious than those lordly Brahmans of Nadiya. Our race has sinned greatly against cows and Brahmans. We are dwarfs standing on tiptoe to catch the moon. Stoop in mercy towards us.' Chaitanya cordially received them, and assured them of their salvation. 'Krishna will save you; henceforth you shall be known to the world under the names of Rupa and Sonatun.' The reception of two Muhammadan nobles evinced a moral courage of no common order, which, while it showed Chaitanya's deep conviction of the purity and popularity of his faith, afforded conclusive evidence of his extraordinary boldness in disregarding the injunctions of caste and race, and his intention to build religion on the fatherhood of God and the brotherhood of man. It must be remembered that the convert brothers were members of a court which was intolerant of Hinduism, and served a king who, claiming as he did direct descent from the prophet, was particularly aggressive against its doctrines. This act, therefore, was calculated to enlist against the reformer not only the active antagonism of the king and the court of Bengal, but the hostility of the Hindus, who had been accustomed to regard the Muhammadans as M'hechas, association with whom, in a Hindu religious point of view, is contamination. He, however, fully expected his disciples to cast aside all antiquated prejudices, and above all, and beyond all, to have faith, which he rightfully applied as the true test of training in Vaishnavism. He was emphatically what the Germans call an epoch-making man, representing some of the best elements of Hindu thought and Hindu character, and illustrating in himself the strength and weakness of Hindu theology. His object was grandly catholic. It was to rebuild Hindu society from its foundation, to exterminate priestcraft, to eradicate the evils of caste, to introduce religious toleration, to assert the right of equality of man, and to establish the relations of his fellow-beings on the principle of a universal brotherhood. A fanatic and a mystic, Chaitanya never deviated from his appointed course; and the immense influence he had acquired over the hearts of his followers, he applied to the furtherance of no personal objects, but of that religion to which he had consecrated his life and his energies.—*Calcutta Review*, No. 109, p. 100.

PRANT, an ancient Hindu term, signifying a considerable subdivision of a country.—*Jervis's Geographical Memoir*, p. 81.

PRAPUL, the footmark of Arhan, in the island of Sinhal so called.

PRASADA. SANSK. Prasadham. Prasada, in the Vaishnava sect of Hindu religion, is an article of food, consecrated by previous presentation to an idol, after which it is distributed amongst the worshippers on the spot, or sent to persons of consequence at their own homes. It was the prasada or meat offered to idols from which, in Acts xv. 29, the followers of Jesus Christ were told to abstain. Yet 1 Corinthians x. 25 says, 'Whatsoever is sold in the shambles, that eat, asking no question for conscience sake.' In Orissa, the people buy the boiled rice which has been offered to Jagannath, and all the different castes eat of it together, as an act of merit; the same conduct in Bengal would make them out-castes. The Buddhists of Burma also throw away the offerings; and at the great Shooay-Dagon at Rangoon and the Prom temple, Shooay-San-Dau, vast heaps of boiled rice are thrown over on the rocks. But most Hindus eagerly seek whatever has been offered to an idol; hence it is common to see flowers which have been thus offered, placed in the hair of a Hindu. Water that has been thus made sacred is preserved in Hindu houses, and with it they rub their bodies, and occasionally sip a drop. The celebrated Gouget has remarked that the custom of offering food to the object of divine homage had its origin in a principle of gratitude, the repast being deemed hallowed by presenting the first portion to him who gave it, since the devotee was unable to conceive aught more acceptable than that whereby life is sustained. From the earliest period such offerings have been tendered; and in the burnt-offering (hom) of Abel of the firstling of the flock, and the first portion of the repast presented by the Rajput to Ana Deva, the nourisher, the motive is the same. The Mukhia servants of the temple of Kaniya carry the sacred food to whosoever the votaries dwell, which produces an ample return. At the same time are transmitted, as from the god, dresses of honour corresponding in material and value with the rank of the receiver, a diadem or fillet of satin and gold, embroidered; a dagla or quilted coat of gold or silver brocade for the cold weather; a scarf of blue and gold; or, if to one who prizes the gift less for its intrinsic worth than as a mark of special favour, a fragment of the garland worn on some festival by the god; or a simple necklace, by which he is inaugurated amongst the elect. Kaniya ki kanti band' hua, 'to bind on the neck the chaplet of Kaniya,' is the initiatory step. At the present day, Christians of no sect make any food-offerings to images. The Hebrew races, however, as also the Muhammadans, only partake of the flesh of such animals as have been made lawful food by being prayed over before being killed. This is called amongst Muhammadans Halal karna, to make lawful, and a Muhammadan recites the words Bismillahi, Allaho-Akbar. Otherwise, it is haram, unlawful. In the name of the Lord, to God, the great. In the butcher shops of the towns of Europe where the Hebrew races reside, a mark is put on the animals which have been made lawful for food. When the animal is

slaughtered and skinned, an examiner appointed by the synagogue carefully inspects the inside; and meat that has been killed according to the Jewish law, and is lawful to eat, is distinguished by a leaden seal, stamped in Hebrew characters with the name of the examiner, and the word Koshar, meaning lawful. That killed in any other fashion is called 'tryfer.' The Hebrew Scriptures three times command, 'Thou shalt not seethe a kid in his mother's milk' (Exodus xxiii. 19, and xxxiv. 26; and Deuteronomy xiv. 21). The utmost care has been used in carrying out both the letter and the spirit of this injunction, and particular vessels used for dressing flesh and others for milk, and a complete separation required for dishes, plates, knives, forks, and so forth. No vessels of wood or earth may be purchased at second-hand, and those of metal or stone have to be well scoured with hot ashes or scalded in boiling water before it was considered proper to employ them in the preparation of food. The Hindu races are even more stringent than the Hebrew, and many of the Vaishnava sect do not allow a stranger to see the cooking. Numerous others do not permit any one to see them eating.—*Tod's Rajasthan*, i. p. 529.

PRASANNA RAGHAVA, a drama by Jaya Deva in seven acts.—*Dowson*.

PRASE, a quartzose mineral; it is found amongst the pebbles on the shore at Trincomalee in Ceylon, and in the Dekhan trap.

PRASENJIT, son of Susandhi, was 24th of the line of Ikshwaku. In the 6th century B.C., Rajas Prasenajita and Ajata Satra visited Buddha.

PRASHADA. SANSK. A heresy. Some of the popular works of the Hindus allude to 96 prashada or heresies, viz. amongst the

Brahmans,	24	Saura,	18
Sanyasi,	12	Jangama,	18
Viragi,	12	Joci,	12

PRASII of the Greeks, the Prachi of Hindu writers, the name of the tract in which Magadha is situated. Arrian and Strabo say that the Prasi were the most distinguished of all the Indian nations. Their empire at one time seems to have included most of the tract through which the Ganges flows after it enters the plains of Hindustan.—*Rennell's Memoir*, p. 50. See Prachya.

PRASTHA. See Pat.

PRATARDANA, called also Vatsa, Satrajit, Ritha-dwaja, and Kuvalayaswa, was son of Divo Dasa, king of Benares. Divo Dasa was driven from Benares in a revolution brought about by the Buddhist and Saiva sects. Divo Dasa dispossessed the Bhadrasena family from a district on the Gunti, but it was recovered by Durdana, and again lost to Pratardan, who avenged the slaughter of his father and family. See Divo Dasa.

PRATCHAN. MALAY. In Borneo, a red condiment made of prawns. It is in the form of a paste, and is sold at 3 dollars per pikul. Dry pratchan sells at 10 or 12 cents per quintang.—*Burbridge*, p. 177.

PRATISAKHYA, four treatises on the phonetic laws of the language of the Vedas.—*Dowson*.

PRAVARA, SANSK., in the Hindu worship, means the invocation of those ancestors whose names are to be coupled with that of Agni when the latter is invited to be present at the consecration of the sacrificial fire.

PRAWN. *Palæmon*, sp.

Jeengha,	HIND.	Langostin,	SP.
Gambro marino,	IT.	Eeral,	TAM.
Oodang,	MALAY.	Roiello,	TEL.

Palæmon serratus and other species are abundant along the coasts of the S. and E. of Asia. In China, prawns, shrimps, crabs, crawfish, and other kinds of crustacea, are abundant and palatable. One species of Chinese crawfish, as large as but not taking the place of the lobster, is called lang hai, or dragon crab. It and cuttlefish of three or four kinds, and the large king crab (*Polyphemus*), are all eaten by the Chinese.—*Ains. Mat. Med.* p. 155.

PRAY. The Manu Manau tribe are called Pray by the Red Karen; they dwell between the Sgau and Red Karen.

PRAYAGA, the modern Allahabad, also called Pratihthana and Triveni. It is described in ancient Hindu writings as at the confluence of the Yamuna and Ganges, on the bank of the latter; it would seem, therefore, so late as the composition of the drama of the Hero and the Nymph, that that ancient city still stood opposite to its present site. The ruins, according to Hamilton, were still to be seen at Jhusi, on the left bank of the Ganges. Prayaga was a holy place, having been the seat of Bharadhwa's hermitage; but Allahabad never was a city until Akbar made it one. Akbar called his fort Ilahabad, and it was afterwards called by Shah Jahan, Allahabad. The name of Prayaga is recorded by Hiwen Thsang in the 7th century, and is in all probability as old as the reign of Asoka, who set up the stone pillar about B.C. 235, while the fort was not built until the end of the 16th century. Hiwen Thsang makes the district of Prayaga about 5000 li, or 833 miles, in circuit; but as it was closely surrounded on all sides by other districts, General Cunningham reduced it to 500 li, or 83 miles, and limits the district to the small tract in the fork of the doab, immediately above the junction of the Ganges and Jumna. There still is the famous tree called Akshay Bat, or undecaying banyan tree. This tree is now underground, at one side of a pillared court, which would appear to have been open formerly, and which is supposed to be the remains of the temple described by Hiwen Thsang. The temple is situated inside the fort of Allahabad, and due north from the stone pillar of Asoka and Samudra Gupta. According to the common tradition of the people, the name of Prayaga was derived from a Brahman who lived during the reign of Akbar. The story is, that when the emperor was building the fort, the walls on the river-face repeatedly fell down, in spite of all the precaution taken by the architect. The old city of Prayaga has totally disappeared, and we can scarcely expect to find any traces of the various Buddhist monuments which were seen and described by the Chinese Pilgrims in the 7th century.—*Cunningham's Ancient Geo. of Ind.* p. 388; *Tr. Hind.* i. pp. 207, 317; *Hindu Theatre*, i. p. 207; *The Hero and the Nymph*; *Hamilton's Genealogies of the Hindus*. See lat.

PRAYER, Salut, Dua, ARAB., Namaz, PERS., is part of the ritual of worship of the Hindus called puja. The Muhammadan prayers are dua, namaz, and salut. The Muhammadan prayer is called 'salla,' and its performance is required five times in each day. The first time of prayer commences a few

minutes after sunset, the second at nightfall, the third at daybreak, the fourth a little after noon. Mahomed would not have his followers commence their prayers at sunrise, nor exactly at noon or sunset, because, he said, infidels worshipped the sun at such times.

PRECIOUS STONES.

Pierre precieuse,	FR.	Gemma,	IT.
Edelstein,	GER.	Piedra preciosa,	SP.

Precious stones are often termed gems by jewellers, who thus designate all minerals remarkable for their hardness, lustre, and beauty; but transparency, brilliancy, lustre, and freedom from defects, to be of great value, should also have associated with them the exact quantity of colouring to furnish the favoured tint. Besides the distinction of gems for the most beautiful of the minerals in jewellers' and lapidaries' work, under the term 'inferior gems' they utilize for ornamental purposes many quartzose minerals, while pearls and nacre from molluscs are amongst the most esteemed of the gems, and coral from the animal, with jet and amber from the vegetable kingdoms, are much appreciated by many races.

If the precious stones in use as gems be noticed chemically, the diamond is a crystallized form of carbon; the balas ruby and spinel ruby are compounds of alumina and magnesia; the chrysoberyl and its variety Alexandrite are combinations of alumina and glucina; the sapphire and ruby, the sesqui-oxide of aluminium; the hyacinth and jargon (zircon), a compound of silica and zirconia; the beryl, emerald, and euclase, compound silicates of aluminium and glucinum; tourmaline and rubellite, boro-silicate of several bases; lapis-lazuli, a combination of silicate and sulphate of aluminium; and turquoise, a hydrated phosphate of aluminium; amethyst, sard, plasma, prase, chaledony, and noble opal are varieties of silica or quartz; chrysolite and peridot, a silicate of magnesia and iron; and garnets have a varied composition, containing two or more of calcium, magnesium, iron, manganese, aluminium, chromium.

From the most ancient times all races have attributed fanciful virtues to them. The diamond was considered by the Romans a remedy against incubus and succubus; the ruby against poison; jacinth procured sleep; sapphire procured favour with princes; it was on tables of sapphire that the ten commandments were engraved, and it was also supposed to preserve the sight; the chrysolite assuaged wrath. Each of the twelve apostles was symbolized with a precious stone,—Peter by jasper, John by emerald, and so on. A sardius was placed in the breast-plate of the Hebrew high priest; any precious stone of a red hue was supposed by the Jews to be a preservative against plague, and by the Arabs to be useful in stopping hæmorrhage.

The value of these minerals varies. From their small bulk and consequent portability, gems have always risen in price during wars. In the French revolution from 1789 to 1796, diamonds are stated by Mr. Emanuel to have doubled their usual price. The prices of the larger are also regulated by the demand and by the fancies of purchasers. The prices of gems seem always to have been higher in Asia than in Europe. Since the middle of the 19th century, fresh sources of precious stones have been discovered in Australia and at the Cape of Good Hope, and much alteration has occurred in

the prices. The most valued gems have been selling in India at 25 per cent. higher than in London. Yet India continues largely to export some kinds, and in the five years 1856-57 to 1860-61, the quantities exported ranged in value from £138,224 to £153,748 annually, nearly all being sent from Bombay, chiefly to Aden, Suez, which took about four-fifths, the rest to the United Kingdom, China, and France. Since then the exports amounted to Rs. 1,87,362 in 1882-83, and the imports rose to Rs. 36,82,177 in 1880-81.

Arabia is said to have the topaz, the onyx, and the yemani or akik. The agate is found near Mocha, emeralds in the Hejaz, beryls and carnelian near San'aa and Aden, malachite in the cavern of Beni Salem; also jasper, amethyst, and turquoise in the environs of the village of Safwa, about three days' journey from Medina. The diamond, the sardonyx, and the topaz were obtained through Arabia in ancient times.

Tavernier, writing of his time, p. 144, tells us 'there are but two places in all the east where coloured stones are found, within the kingdom of Pegu and the island of Ceylon. The first is a mountain twelve days' journey or thereabouts from Siren towards the north-east, the name whereof is Capelan. In this mine are found great quantities of rubies and espinels or mothers of rubies, yellow topazes, blue and white sapphires, jacinths, amethysts, and other stones of different colours. Among these stones, which are hard, they find other stones of various colours that are very soft, which they call Bacan in the language of the country, but are of little or no esteem.'

In *Southern India*, the localities which supply the beryl are also supposed to have yielded the emerald, though Tavernier was not able to ascertain that any part of India, in his day, was yielding emeralds. 'As for emeralds,' he says (p. 144), 'it is a vulgar error to say they came originally from the east. And therefore when jewellers and goldsmiths do prefer a deep-coloured emerald inclining to black, tell ye it is an oriental emerald, they speak that which is not true. I confess I could never discover in what part of our continent those stones are found. But sure I am, that the eastern part of the world never produced any of those stones neither in the continent nor in the islands. True it is, that since the discovery of America some of those stones have been often brought rough from Peru to the Philippine Islands, whence they have been transported into Europe; but this is not enough to make them oriental. Besides that, at this time they send them into Spain through the North Sea.'

In the southern part of *Ceylon* is an extensive group of mountains rising to the height of 7000 or 8000 feet, which successive falls diminish till they rest on the alluvial plains of the low country. The S.W. face of this group forms a bold range, crowned at its western extremity by Adam's Peak, called by the people Sri-paia or Holy Foot, and at the eastern end of the range in Kirizalpota, which rises in abrupt precipices to 8000 feet above the plains. Ratnapura, or city of gems, is in part of this range. It is about 60 miles from Colombo, and about 200 feet above the level of the sea. It is the centre of the gem-producing district, which extends about fifty miles along the base of this mountain range, and in this district, comprising Saffragam and the Three

Korles, the search for gems is a regular occupation of the people in the beds of streams and in the alluvial plains lying in the valleys upon their banks. The gems found in that locality are the sapphire, the ruby, and the topaz; the cat's eye, amethyst, and beryl; and the spinel ruby is also found, but is more rare. They are found in a layer of gravel fifteen to twenty feet deep, to which they sink a pit, and if they meet with a thin hard crust of ferruginous stones or masses of milk quartz, such are always favourable signs. The ruby, amethyst, topaz, sapphire, and cinnamon-stone are found there in great abundance; also spinel, chrysoberyl, and corundum. Red, purple, blue, yellow corundums and star-stones are met with at Mathura and Saffragam, and rubies and sapphires at Badulla and Saffragam. Corundum is very plentiful at Battagamana, on the banks of the river Agiri Kandura. The great bulk of the Ceylon gems, however, come from Ratnapura, the city of gems, the river near which is regularly worked. Ceylon affords also all the varieties of quartzose minerals, as rock-crystal, amethyst, rose-quartz, cat's eye, and prase. Rock-crystal occurs in abundance, both massive and crystallized, of various colours, good quality, and in large masses. Amethyst also is pretty abundant; very beautiful specimens of this mineral are found in the alluvion derived from the decomposition of gneiss and granitic rock at Saffragam and the Seven Korles. A large crystal of it was found near Buanwelle, containing apparently two distinct drops of water. The finest cat's eyes in the world, indeed the only kind that bring a high price, have been found in the granitic alluvion of Saffragam and Matura. Prase occurs only amongst the pebbles on the shore of Trincomalee. Belonging to the schorl family are tourmaline and schorl.

Corundum. The pure oxide of aluminium is seen in colourless crystals of corundum. With minute traces of colouring materials, these crystals assume rich hues, and when transparent become gems conspicuous for their extensive colour-suite, that rank next in value, as in lustre and hardness, to the diamond. These are the colourless lux-sapphire, the azure sapphire, the ruby, the oriental topaz, oriental amethyst, oriental emerald, etc.

Star-Stones are in the form of a six-rayed star, and there are star-rubies, star-sapphires, and star-topaz. *Emery* is one of the forms of the opaque, granular, massive states of this mineral.

Oriental Ruby is the most valuable of all gems, when of large size, good colour, and free from flaws. They are found in Siam, the Capelan mountains ten days' journey from Syriam, a city in Burma, also in Ceylon, India, Borneo, Sumatra, on the Elbe, on the Espailly in Auvergne, and Isar in Bohemia. The ruby in colour varies from the lightest rose-tint to the deepest carmine, but the most valuable tint is that of 'pigeon's blood,' a pure deep rich red.

Spinel Ruby and *Balas Ruby* belong to the spinel class of minerals, as also are several of the stones sold as Ceylon rubies. Tourmaline, when of a red colour, is called Brazilian ruby, and this term is also applied to the artificially coloured topaz. The ruby brings a higher price

Carat.	£
1	14-20
1½	25-35
2	70-80
3	200-250
4	400-450

than the diamond, ranging as per margin. *Star Rubies* are asteriated corundums. *Tourmaline* is sometimes mistaken for the ruby, and the pink topaz for the balas ruby.

Spinel ruby and balas rubies are found in Ceylon, Burma, Mysore, Baluchistan. The spinel ruby is of a deep hue. They are comparatively of little value, but are often sold for the true ruby, and the true ruby is occasionally parted with as a spinel ruby. With jewellers, however, every bright red mineral takes the name of ruby. The name is even given to garnets. Hindus and Muhammadans in India greatly object to the dark-coloured stones, deeming them unlucky.

Sapphire with the ancients was a generic term for all blue gems. It occurs in British India, in the south of the Peninsula and Ceylon, also in Ladakh and in Siam. Sapphires vary from the deepest blue to black, and are often of varied hues. If held in water with forceps, the coloured and uncoloured stones will be seen. A very good blue sapphire of one carat weight would bring £20.

In Tavernier's time, in India all rubies were sold by weights called rati,—that is, three grains and a half or seven-eighths of a carat; the payments were made in old pagodas; and rubies of the following weights had been sold as under:—

Of 1 rati, . . .	Pags. 20	Of 4½ rati, . . .	Pags. 450
Of 2½ rati, . . .	85	Of 5 rati, . . .	525
Of 3½ rati, . . .	185	Of 6½ rati, . . .	920

If a ruby exceeded six rati, and was a perfect stone, there was no value to be set upon it.

Tavernier says (p. 143), 'The other place where rubies are found is a river in the island of Ceylon, which descends from certain high mountains in the middle of the island, which swells very high when the rains fall; but when the waters are low, the people make it their business to search among the sands for rubies, sapphires, and topazes. All the stones that are found in this river are generally fairer and clearer than those of Pegu. I forgot to tell you that there are some rubies, but more balas rubies, and an abundance of hasterd rubies, sapphires, and topazes found in the mountains that run along from Pegu to the kingdom of Camboya.'

Oriental Emerald, the green variety of corundum, is the rarest of all gems. The finest occur in a limestone rock at Muzo in New Granada, near Santa Fé de Bogota, lat. 5° 28'; at Odontchelong in Siberia, and, as is said, near Ava. It is associated with spinel. When of a deep rich grass-green colour, clear, and free from flaws, it sells at from £20 to £40 the carat; those of lighter shade, from 5s. to £15 the carat. The emerald pillars in the temple of Hercules at Tyre, the emerald sent from Babylon as a present to a king of Egypt, four cubits in length and three in breadth, and the emerald obelisk described by Herodotus, were all doubtless green jasper. The Aral and Altai mountains have furnished fine emeralds.

The *Prismatic Corundums* found among the Tora Hills near Rajmahal, on the Bunas, in irregular rolled pieces, small, and of a light green colour, are sold as emeralds by the natives, under the name of panna or pana.

Beryl includes the emerald of jewellers, and also their aqua marine. It is an aluminio-glucinium silicate, the aluminium being in the emerald apparently displaced to a minute amount by chromium.

Aqua marine includes clear beryls of a sea-green or pale-bluish or bluish-green tint. Hindus and Muhammadans largely use them pierced as pendants and in armbands. They are the seing or seign of the Burmese and the zamarrud of the Persians. At the Madras Exhibition of 1855, a good specimen of aqua marine was contributed from Mysore; other samples of long reed crystals were forwarded by the Nellore Local Committee.

Topaz was so called from the island of Topazion in the Red Sea. There is a gold-coloured and greenish-yellow topaz. Oriental topaz is of little value in commerce. The gem is of a yellow tint, seldom deep, of a light straw colour. Oriental topaz, ruby, and sapphire consist of 90 per cent. of pure alumina, 7 per cent. of silica coloured with oxide of iron.

Zircon consists of zirconic and silicic dioxides. Its pellucid varieties are gems. The dull green is the jargon; the red-tinted varieties are the hyacinth or jacinth. The yellow and blue tints are rare, but the more pellucid and colourless zircon, from its exceptionally high refractive power, approaches even the diamond in brilliancy. Zircon is found in the Ceylon districts of Matura and Saffragam. Matura diamond is the name applied to its finest varieties by the dealers in gems. Besides the two well-established species, common zircon and hyacinth, there is a third, massive, opaque, and uncrystallized, and of a dark-brown colour. Specimens of it from Saffragam weigh two or three ounces. The yellow varieties are sold by the natives as a peculiar kind of topaz, the green as tourmalines, the hyacinth red as inferior rubies, and the very light grey as imperfect diamonds. All the varieties are found in the beds of rivers or in alluvial ground, which, both in Saffragam and Matura, is of the same kind. Zircon occurs in alluvium in the Ellore district of the Madras Presidency.

Chrysoberyl consists of glucina and alumina (aluminate of glucinum). As a gem it is known as the oriental chrysolite, also as cymophane. It is a beautiful greenish-yellow stone, almost equal in lustre and hardness to the sapphire. Chrysoberyl is sometimes with a yellow or brownish tinge, and occasionally presenting internally an opalescent bluish-white light. When green, transparent, and free from flaws, it is much prized. The less transparent specimens, when cut *en cabochon*, furnish one of the kinds of precious stones to which jewellers give the name of cat's eye. The dark-green variety from the Aral is called Alexandrite.

Diamonds are found in India, Sumatra, Borneo? Australia, the Cape Colony, the Aral mountains, Brazil, and South America. It occurs in India, in the Dekhan, near the river Pennar in the Cuddapah district, and near Banaganapilly, in the lower part of the Kistna, formerly near Ellore, and bed of the Godavery. The diamond sold in 1856? to the emperor Louis Napoleon for £5000, was said to have been obtained in the Pennar or at Banaganapilly. They are also found at Panna in Bundelkhand, and at Sumbulpore on the Mahanadi. Thara and Tora are two diamond-washing tribes who possessed sixteen jaghir villages at Sumbulpore. They are supposed to be of African origin. Another aboriginal tribe called the Jhira are said to have held their villages rent-free on condition of washing the sands of the river for diamonds, which were made over to the raja, while the gold ob-

tained at the same time remained the perch site of the finders.

Diamonds are found in quartz conglomerates containing oxide of iron, also in alluvium, in loose and embedded crystals, almost always of small size, and most frequent in company with grains of gold and platinum. Diamonds are found crystalline and amorphous, and of all colours, white, yellow, orange, red, pink, brown, green, blue, black, and opalescent. The rocks in which the diamond occurs in Brazil are either a ferruginous quartzose conglomerate, or a laminated granular quartz called itacolomite. The latter rock occurs in the Arals, and diamonds have been found in it; and it is also abundant in Georgia and North Carolina. In India, the rock is a quartzose conglomerate. Mr. Ball tells us that there are diamond mines in various parts of Bundelkhand, but the principal are near Panna, its capital. Other diamond areas are at Badrachellum on the Godavery, near the Kistna river, and near Banaganapilly and Cuddapah. A diamond tract occupies a considerable area between the Mahanadi and Godavery rivers, viz. at Sumbulpore, with the bed of the Mahanadi for many miles above it, and Weiragarh 80 miles to the S.E. of Nagpur. About A.D. 1870, some small diamonds were stated to have been found in a hill stream near Simla.

At Panna, diamonds are only known certainly to occur in situ in a conglomerate which is referred geologically to the Rewa group, but there are also numerous workings in alluvial or superficial deposits.

In the Cuddapah district, the principal workings have been at Cunnapurti and Ovalumpilly, near Chennur, on opposite banks of the Pennar river, and Lamdur and Pinchetgapu, west of Chennur.

In the Kurnool district, the mines are at Banaganapilly, Munimadagu, Kamukotta, Timapuram, Yembye, Bhanpully, Guramkonda, Gudipad, Bannur, Devanur, Shaitan Kottah, Dewmarruh, Tandrapad, and Baswapur.

In the Kistna and Godavery districts, diamonds are obtained at Golapilly, Malavilly, Purlial, Ganicolur or kullur, etc., the pits at Golapilly and Malavilly being sunk in conglomerates and pebble beds of tertiary age.

In the bed of the Mahanadi, at Sumbulpore, and about the mouths of the Hebe Khelu and Mand streams, large diamonds have occasionally been found. The place of working is called Heera Khond.

At Weiragarh, in lat. 20° 36' N., and long. 79° 31' 30" E., 80 miles S.E. of Nagpur, the diamonds are found in a lateritic grit; and at the sources of the Hebe river, in Gangpur, in the Icha river, a tributary of the Hebe, and also in the Sunk river.

In Bundelkhand, the diamond bed proper near Panna is a conglomerate. The rock diggings do not cover a space of more than 20 acres, and the miners excavate great pits, 25 feet broad and often 30 feet deep. At Kumerea (or Kahmura), locally called Kakru, to the east of Panna, the diamonds are found in a conglomerate sandstone made up of small pebbles. There are diamond mines also at Udesna, Sakeriva, Mujgaon, Boghin.

An inventory of the precious stones of the crown of France was made in 1832, showing the number to be 64,812, of value £845,000. The

value of those of the Brazil sovereign is said to be £5,000,000.

The British crown jewels comprise 1 large ruby, 4 rubies, 1 large sapphire, 16 sapphires, 11 emeralds, 1363 brilliants, 1272 rose diamonds, 147 table diamonds, 4 drop-shaped pearls, 273 pearls.

Precious stones and pearls exported from India.	Precious stones and pearls imported into India, unset.
1874-75, . . . Ra. 5,56,683	1874-75, . . . Ra. 15,96,694
1875-76, . . . 4,80,859	1875-76, . . . 13,93,591
1876-77, . . . 6,24,666	1876-77, . . . 16,40,391
1877-78, . . . 6,75,649	1877-78, . . . 19,40,848
1878-79, . . . 3,94,563	1878-79, . . . 13,15,032
1879-80, . . . 2,55,639	1879-80, . . . 15,52,799
1880-81, . . . 1,60,075	1880-81, . . . 36,82,177
1881-82, . . . 1,66,197	1881-82, . . . 24,23,629
1882-83, . . . 1,87,362	1882-83, . . . 17,25,170

Artificial Gems are largely made, and many of the precious stones are well imitated. Doublets are partly true gems above, and partly false, being a portion of a true joined artistically to glass or other gem below. Lapidaries and jewellers even are sometimes deceived by false gems, and of others entertain grave doubts. Birmingham sends many blue cut-glass false gems to Colombo for sale. The glass of bottle bottoms is even sold in Ceylon and other places as emeralds. Emeralds are rarely without defects, called flaws, 'Rag,' HIND., and manufacturers, aware of this, make false emeralds with flaws. Of all precious stones, the emerald is most liable to defects, and their absence should excite suspicion, as they can be very easily imitated. Strass is a technical term for the base of the artificial gems.

Precious stones are not exclusively articles of luxury; diamonds are largely used in the glazing and other trades, and rubies and sapphires in the manufacture of watches. They are lavishly used by Indian jewellers, who care less for their purity and commercial value than for the general effect produced by a blaze of splendour. And Sir George Birdwood remarks, nothing can exceed the skill, artistic feeling, and effectiveness with which gems are used in India, whether in jewellery proper, in the jewelled decoration of arms, and by Hindus in the ornamentation of the images in their temples. The quantity of diamonds, emeralds, and rubies in the Srirangam shrine surpasses all imagination, though perhaps few of them are without flaws. It is a marvellous sight.

Adularia or moon-stone is very abundant in some parts of the interior of Ceylon, particularly in the neighbourhood of Kandy, where it is occasionally the predominating ingredient of the rock. It is a variety of felspar, a form of orthoclase, and of little value.

Agate, the *αγάρ* of the Greeks and Akeek of the Arabs, is found in great variety and abundance in many parts of India. Some of the agates and other silicious minerals in the amygdaloid rocks on the banks of the Seena river, between Sholapur and Ahmadnagar, are of great size and in profusion, but the most beautiful are brought from Rajpipla and Cambay.

Amber is largely obtained in many parts of Europe, and in Independent Burma, from mines at Hukong or Phayendwen, near the sources of the Kyendwen.

Amethyst.	
Jaballakum, . . . ARAB.	Martas, . . . MALAY.
Amethyste, . . . FR.	Sang-i-Sulimani, . . . PERS.
amethystos, . . . GR.	Ametisto, . . . PORT. SP.
Amatista, . . . IT.	Sugandi kallu, . . . TAM.
Amethystus, . . . LAT.	

The amethyst is mentioned in Exodus xxviii. 19, and xxxix. 12, but under this term two different minerals are known, viz. the common amethyst, a quartzose mineral found in amygdaloid trap rocks in all countries, but in some quantity amongst the volcanic rocks of the

Dekhan. Some beautiful specimens of common amethyst crystals occur in dykes of quartz near Bowenpilly, at Secunderabad. It is rock crystal coloured with iron and manganese. Its colour is of every shade of purple violet; some of these are valued, for it is almost the only stone that can be worn with mournings. When the colour of a specimen has to be equalized, it is placed in a mixture of sand and iron filings, and exposed to a moderate heat. The oriental amethyst of jewellers is also of a purple colour, but is an extremely rare variety of corundum. Its colour can be destroyed by heat, and its purity then resembles that of the diamond.

Beryl. Some beryls are quite colourless, but green, blue, or yellow are prevailing tints. The finest beryls were described by Pliny as those which are of a clear sea-green colour—*qui viridatem puri maris*; hence crystals of clear tints of sea-green or sky-blue are called *aqua marinas* or *aqua marines*. Beryl occurs in considerable abundance at Kanguim, in the Tanjore collectorate of S. India, in the Siberian Altai range, also in Khotan, Ilchi, and other Chinese provinces. In the United States very large beryls have been obtained, but seldom transparent crystals. Numbers of the Hindus and Muhammadans of Southern India wear them pierced as armlets and pendants, and call them by names given also to the emerald,—as *samarud*, *zabrijad*, and *panna*. The colours most esteemed in Northern India are the *zababi*, next the *saidi* (from the town of Saidi in Egypt); *rahbani*, new emeralds; *fastiki*, old emeralds, which they imagine have completed a growth of 20 years; *salki*, *zangari* (colour of verdigris), *kirasi*, and *sabuni*. Dr. Irvine says (Gen. Med. Top.) prismatic corundum or chrysoberyl is found among the Tora Hills near Rajmahal, on the Bunas, in irregularly rolled pieces, small, and generally of a light green colour. These stones are considered by the natives as emeralds, and pass under the name of *panna*; but the natives are aware that they are still softer than the real emerald of India.

Cat's Eye.

Bel oocchio,	IT.	Zmilampis,	IAT.
Bel oculus,	LAT.	Mata-kuching,	MALAY.
Zmilaces,		Chashm-i-maidah,	PERH.

Cat's eye is chiefly found in Ceylon, but specimens are also obtained from Quilon and Cochin, and in the neighbourhood of Madras; the site of the last, however, has not been traced. It is brought from Burma. It is a transparent quartz full of minute fibres of asbestos, and is cut in a highly convex form. It is of a yellow hue, slightly tinged with green. The cat's eye is often set in rings, and is much valued in India; those seen in the Moulmein market are not much valued. A small one may be purchased for two rupees, and one of ordinary size for five; while ten rupees is the highest price given for the best. Mr. Edward Streeter (p. 167) distinguishes the true or chrysoberyl cat's eye from the quartz cat's eye. The former is a rare variety of the chrysoberyl.

Chrysolite and peridot are silicates of magnesia with iron, and chrysolite is also a yellowish-green corundum. The name is also given to a coloured variety of rock-crystal. Oriental peridot is of a very pleasing, yellowish-green colour, and is a very beautiful gem. It was at one time considered of more value than the diamond. Mr. Streeter says the chrysolite of the ancients is now termed oriental topaz. It is a corundum formed of alumina, coloured golden-yellow by oxide of iron.

Coral is being utilized by the people of India in rapidly increasing quantities. In 1877-78, 65,527 lbs., value Rs. 6,90,875, were imported from the Mediterranean, while in 1883 the quantity was 152,372 lbs., value Rs. 19,59,367. A small part is re-exported. Coral of a pale delicate pink colour is now the most valued in England, a large drop or bead selling at £30 to £40, and smaller pieces at £120 to £150 the ounce. Red is esteemed in India.

Corundum occurs in great abundance in Mysore, in the Coimbatore district of the Madras Presidency; and its crystalline, translucent coloured varieties are the gems known to jewellers as the ruby, emerald, topaz, and sapphire. The emerald is one of the rarest of these varieties. The oriental ruby or red variety of corundum is very rare; when pure in water and colour it is very valuable. The blue variety of corundum is the oriental sapphire, is in greater abundance, but of inferior value,

and its colours greatly vary, from the deepest velvet-blue to the palest and almost imperceptible tint, even losing all that and becoming colourless, and in that form is a very beautiful gem, remarkable for its whiteness and the absence of prismatic colours.

The yellow variety of corundum is called the oriental topaz, which is of every shade of yellow, and when pure it is highly valued. But many stones have a milky opalescence, which makes them valueless. The ordinary topaz of commerce, composed of silica and alumina, with hydro-fluoric acid (hydric-fluoride), commonly of a pale orange, toning down to a straw colour, is of comparatively little value.

When the red and blue are mixed in the corundum, the stone is called oriental amethyst; half a stone will be red and half blue, or emerald, ruby, topaz, and sapphire in the same stone. The Ceylon ruby has occasionally a blue tint, which can be expelled by heat.

The opalescence occurs in rubies, sapphires, and topaz. When such stones are cut *en cabochon* at a certain angle to the axis, they form the star-stone, showing in a strong light a star of six rays, very pretty as a fancy stone, but of no value as a gem.

Diamonds are occasionally colourless. The most valuable diamonds are those known to merchants as blue-white. There are only in Europe three or four diamonds which can be termed blue. The finest of these is the 'Hope' diamond, valued at £30,000. It is of a beautiful sapphire blue.

A recent newspaper article mentions that a diamond, weighing 602 carats, of a dark slate colour, has been found in the Jagersfontein mine, South Africa. Owing to its peculiar colour, experts could fix no precise value, but it is said to be worth at least £2000. It is about the size of a duck's egg. Diamonds occur of a red colour; one in London, weighing about three grains, is valued at £800; and a diamond of a pure emerald green, the property of a W. Indian merchant, is mentioned by Mr. E. W. Streeter as of value £1000. At Banaganapilly black diamonds occur.

Among famed diamonds may be mentioned the Orloff gem possessed by the emperor of Russia, which is said to have been brought from Strirangam; it weighs 194½ carats. The Regent or Pitt weighs 136½; it is said to have been obtained at Partail; but Mr. Pitt is also stated to have bought it for £12,500 from Jam Chund, a diamond merchant. The Sanci weighs 53½ carats. The Matan diamond, belonging to a raja of Borneo, is of 367 carats, and valued at £269,379. The nizam of Hyderabad has one of 340 carats. The Rhodes diamond, of 150 carats, was found 12th February 1880 by Mr. Porter Rhodes in the Kimberley mine in South Africa. The last three are still (1883) uncut. The Pigot diamond weighs 82½. It was brought from India by Lord Pigot. In 1801 it was sold in a lottery for 750,000 francs. The Braganza was discovered in 1741 in Brazil. It weighed 1680 carats. If cut, it is supposed it would weigh 500 carats. It is believed to be a white topaz. The Star of the South, found in Brazil, weighs 254. It was found in July 1853 in one of the mines of the Bogagen district, in the Minas-Geraes province. About one-half of its weight was lost in cutting. Another Brazilian diamond, 138½ carats, was found in 1775 by a negro, a few miles N. of the Rio Plata. One was found in 1878 at Du Toit's pan in S. Africa. It weighs 244 carats. The diamond known as the Star of South Africa was found there about 1868; it weighed 83 carats, and fetched £11,200.

Much artistic skill is requisite in diamond cutting, in order to retain the gem of as great bulk as possible.

A diamond known as the Moghul was cut for Shah Jahan by Hortensio Borjio, a Venetian. It weighed 793½ carats, and he reduced it to 186 carats, which angered the emperor so that he fined him Rs. 10,000, in fact all his possessions.

The Koh-i-Nur weighed on arriving in London 186½ carats, and was valued at £140,000. It was cut by Herr Voorsanger, under Messrs. Coster of Amsterdam, in the atelier of the crown jewels in London, and it was reduced to 106½, and is valued at £100,000. It is the personal property of the Queen-Emperor Victoria. Mr. Streeter is of opinion that it is the Moghul diamond.

The Regent diamond, before cutting, weighed 410 carats, and 136½ after it was cut.

It is supposed that the Rhodes diamond would, when cut, weigh 100 carats. In July 1853, a diamond was

PRECIOUS STONES.

found in Brazil which weighed 254 carats, but was reduced in cutting to 125.

Mr. Bryce Wright, of 204 Regent Street, is in possession of a diamond of some note, set in a ring which was kept for many years in the treasury of the Moghul emperors of Hindustan. It is one of the very few known diamonds that are cut or engraved, and it is supposed that the work upon it, owing to the extreme hardness of the stone, must have cost years of incessant labour. The engraving is believed to be by a Persian artist; it is a monogram composed of two Arabic words interlocked together, making up the invocation, 'O Ali.' The date of the work is supposed to be A.D. 1200.

All the diamond localities yield stones which mineralogically are true diamonds, but do not possess the high qualities to entitle them to be regarded as precious stones. And this remark is equally applicable to all the varieties of the corundum, feldspathic, and other minerals which furnish the gems of the jewellers.

Emeralds are mentioned in Exodus xxviii, 18, also in Tobit, Judith, Ecclesiastes, and Ezekiel. The emerald mines in Jabl Zabarrah in Egypt—the Smaragdus mons of the ancients—were worked B.C. 1650, in the time of Sesostris II. These mines (Bunsen's Egypt, ii. 303) were on the Kossair Road, from Koptos to Aennum (Philoterus).

The *Felspar* group of minerals includes several of value in the arts, such as labradorite, with its beautiful play of colours, moon-stone or orthoclase, valencianite, Amazonite or Amazon stone, and lazulite, called blue felspar and blue apatite.

Fossil wood is in large quantity in Burma, in Sind, and at Vertachellum and Ootatoor, west of Pondicherry. It is used for ornaments.

Garnet, from which carbuncles are formed, is in great abundance in the south of India, chiefly in gneiss rock in the Guntur and Coimbatore districts, also at the Munzerabad Ghat, and in the Aravalli range. Amongst its varieties are the violet-tinted almandine; the yellow and hyacinthine garnets known as cinnamon-stone and essonite, which contain calcium and aluminium; the garnet and pyrope, or Bohemian garnet varieties, when out *en cabochon*, are the carbuncle of jewellery; but the carbuncle (*carbunculus*) of the ancients included all gems of a red colour, such as hyacinths, rubies, garnets. Other varieties of garnet are alchoirite, topazolite, melanite, colophonite, and grossular garnet.

Iolite and cyanite or kyanite imitate the sapphire, but the greater hardness of the sapphire affords an easy test of its genuineness. Kyanite is a silicate of alumina, and occurs in long, thin, blade-like crystals of a clear blue or bluish-white colour.

Jade, which the Chinese so highly value, is brought from Central Asia, one locality being at Gulbagashen in the valley of Karakash. The Yu or Jade mines of Independent Burma are in the Mogoung district, about 25 miles S.W. of Maing-Khum. Momiens in Yunnan was formerly a chief seat of the manufacture of jade, and still sends out a considerable quantity of small articles. Jade was imported from Burma in 1880-81 to the value of Rs. 2,45,650, and mostly all re-exported to Singapore and China. It is also called nephrite.

Jet is imported into India from Europe, and is only worn by Europeans. Large quantities of lignite are found in the tertiary strata along the sea-coast of India, but none of it takes a good polish.

Lapis-lazuli, or azure-stone, from Central Asia, is not in much request in India. It was the sapphire of Pliny. It is found in High Asia and in China provinces. In ancient times it was used for cameos and intaglios. The Chinese make it into cups, vases, buttons, caskets.

Malachite, an imported mineral, is rarely worn, and only by Europeans. It occurs in the copper mines in Australia, also largely in Russian provinces.

Mother of Pearl is the nacre from the interior of the shells of molluscs, chiefly from that of the *Meleagrina margaritifera*.

Onyx, a quartzose mineral, is so named because of its substance being in layers of two colours, as on the nail of the human hand. One of the layers is white, the other of a greyish tint. In its natural state it is a sober mineral, but it is stained black by being boiled in honey, oil, or sugared water, and then in sulphuric acid. For red, protosulphate of iron is added; and for

PRECIOUS STONES.

blue, yellow prussiate of potash is added to the protosulphate of iron.

Precious Opal has as varieties the Mexican fire opal, the noble opal of Hungary. Precious opal is the most beautiful of all gems. Its price depends on the play of colours displayed. The hydrophane or Mexican opal loses its beauty when exposed to water.

Common Opal, of a dull white without any play of colours, occurs massive in the volcanic tract of the Dekhan. It is used as a charm round horses' necks, and by native dentists for false teeth.

Oriental is a term employed by jewellers to designate precious stones of the highest value. It is now excluded from books of mineralogy, the minerals to which it was formerly applied being now-a-days noticed under their chemical composition.

Pearls occur of all colours. Those of Asia, from the sea pearl oyster, *Meleagrina margaritifera*, are found on the west coast of Ceylon, in the gulf of Manaar, in the Persian Gulf, in the Sulu Islands, near New Guinea, and in the Red Sea. Off the coast of Ceylon, the fishing season is inaugurated by numerous ceremonies, and the fleet, sometimes of 150 boats, then put to sea. Each boat has a stage at its side, and is manned by ten rowers, ten divers, a steersman, and a shark charmer (pillal karras). The men go down five at a time, each expediting his descent by means of a stone 20 to 25 pounds in weight, and holding their nostrils; they gather about 100 shells in the minute which they remain under water. Each man makes 40 to 50 descents daily. The pearl oysters are thrown on the beach and left to putrefy. In the Persian Gulf, so many as 30,000 persons are said to be employed in the pearl fishery (Job xxviii. 18). According to European taste, a perfect pearl should be round or drop-shaped; of a pure white, slightly transparent; free from specks, spots, or blemish, and possessing the peculiar lustre characteristic of the gem. In India and China, the bright yellow colour is preferred. Cleopatra is fabled to have dissolved in vinegar a pearl of the value of 150,000 aureans or golden crowns, in the presence of Anthony, and to have drunk it off; but it would have required a larger quantity and stronger acid than any one could have taken with impunity, to have done so. Caesar is said to have paid a sum equal to £50,000 sterling for a single pearl. The fellow-drop to the pendant destroyed by Cleopatra is said to have been seen in two by command of the emperor Augustus, and used to adorn the statue of Venus. The mother of the last nawab of the Carnatic gave him a necklace of pearls, each of which cost about Rs. 1000.

Quartzose minerals are largely used for personal ornament, for articles of luxury, and in the decorative arts. They have been skillfully adapted in the ornamentation of the beautiful Taj Mahal at Agra. Those better known to jewellers and lapidaries are sometimes designated inferior gems, such as the agate, amethyst, bloodstone or heliotrope, chrysoprase of an apple-green colour, carnelian, jasper and Egyptian jasper, onyx, common opal, plasma, rock-crystal, sard, and sardonyx. The last is rarely seen in India. Jasper, onyx, common opal, bloodstone or heliotrope are found in abundance in many parts of the Dekhan, in the valley of the Godavary, and amongst the Cambay stones. Mocha-stones and moss-stones of great beauty occur among the minerals from Cambay. Cambay enjoys celebrity for its agates, mocha-stones, carnelians, and all the chalcædonic and onyx family. All of them are brought from Rajpipla, but worked up at Cambay into every variety of ornament,—cups, boxes, necklaces, handles of daggers, of knives and forks, seals, etc. They are from the amygdaloid trap rocks drained by the Nerbadda and Tapti. The principal varieties sold in Bombay are crystal, milk quartz, prase, a green variety of moss-stone, mocha-stone, fortification agate, calcedony, carnelian, chrysoprase, heliotrope, onyx, obsidian, and very rarely amethyst. These stones abound in all trap countries, the Brazils exporting them as largely as India into Europe, where the terms Brazilian and Indian agates are used indifferently by the trade.

Rock-crystal is abundant in the south of the Peninsula of India at Vellum. It can be dyed. If made red-hot, and plunged repeatedly into the tincture of cochineal, it becomes a ruby; if into a tincture of red sandal, it takes a deep red tint; into tincture of saffron, a yellow

like the topaz; into a tincture of turnesol, a yellow like the topaz; into juice of nerprum, it takes a deep violet like the amethyst; and into a mixture of tincture of turnesol and saffron, it becomes an imitation of the emerald. Steeping the crystal in oil of turpentine saturated with verdigris or spirits of wine, holding dragons' blood or other coloured resins in solution, depths of tints are produced proportioned to the time of steeping. Crystal can be coloured if heated in a crucible with orpiment and arsenic. Crystal coloured red, as false rubies, are known in France as rubaces.

Quartzose minerals were not commonly known in ancient times, and hence were extravagantly esteemed. The fragments of a murrhine cup, the little Cambay stone cup still made in Cambay, were exhibited in the theatre of Nero, 'as if,' adds Pliny, 'they had been the ashes of no less than Alexander the Great himself!' Seventy thousand sesterces was the price of one of these little Cambay cups in Rome in the days of Pompey. The price in Bombay ranges from Rs. 18 to Rs. 35 and Rs. 75. Nero paid 1,000,000 sesterces for a cup, 'a fact,' slily remarks Pliny, 'well worthy of remembrance that the father of his country should have drunk from a vessel of such a costly price.' Amongst the people of India the inferior gems are held in but little esteem; they value a gem for its intrinsic price, not for the workman's skill expended in shaping it, in which the chief value of all the inferior gems consists.

Ruby with lapidaries and jewellers is a term applied to the beautiful red crystals of any minerals which can be used as gems; but the oriental ruby is the red variety of corundum. The finest stones are found in the sand of rivers in Ceylon, in the sand of certain streams, and in the Capelan mountains near Syriam, a former capital of Pegu (Jour. As. Soc. Beng. ii. p. 75), about 60 to 70 miles from the capital in a N.E. direction, and over an area of about a hundred square miles, and sapphires are found along with them. The ruby is considered by eastern jewellers to approach perfection the more closely it resembles the colour of pigeon's blood. The ruby is generally set in rings and brooches, surrounded with brilliants. When placed in the fire a true ruby becomes invisible, but when immersed in water it appears to glow with heat. It is stated in Prinsep's Oriental Accounts of the Precious Minerals, that not to be deceived in rubies is a work of difficulty, because there are spurious ones of polished crystal which much resemble the true gem; these are called Ayn-ul-rajah. Jewellers in the east apply the term *lal* to all rubies of a fine red colour, but their *lal rumani* (scarlet or pomegranate ruby) is probably the true spinel. The bright red spinel ruby, *lal rumani*, is called by modern jewellers as *yaqut naram*, or simply, in Hindustani, *narmah*, also *labri*. The ruby is imitated by spinel, from which it is easily distinguished by superior hardness. The natives, like European mineralogists, distinguish four principal species of *yaqut*,—red (oriental ruby), blue (oriental sapphire), yellow, white, or colourless (oriental topaz), and green (oriental emerald). Natives distinguish the oriental ruby from the spinel, or balas ruby. A pure oriental ruby of ten carats is worth from £300 to £4800, while the spinel ruby and balas ruby would be dear at one-twentieth of the sum. When the red has a decided shade of orange, it usually goes by the name of *vermeil* or *vermeille*, when of a yellowish-red it is called *rubicelle*.

Oriental sapphires are blue transparent varieties of corundum. When perfect, of a clear, bright, prussian-blue colour, and possessed of a high degree of transparency, this stone is valued next to the oriental ruby. It is, however, seldom found in this state, being more frequently pale-blue, passing by degrees into entirely colourless. Pale varieties when exposed to a strong heat entirely lose their colour without undergoing any other alteration, and have often been sold for diamonds.

Sapphire is found in the same earth with the rubies of Burma, but are much more rare, and generally of a larger size. Sapphire occurs crystallized in variously terminated six-sided prisms, and in rolled masses, and is found in the beds of rivers or associated with crystalline rocks. It possesses double refraction, and becomes electric by friction. Is not acted on by acids, and remains unaltered by the fire, red and yellow varieties, if anything, being improved in colour by heating. Sapphire is brought from Ceylon, Siam, Ladakh, and Pegu,

but it is also found in Bohemia, in France, in the brook Rioupezzoulou, near Expailly, in Velay, and in New South Wales. In 1881-82, sapphires from Siam were imported into British India valued at Rs. 45,390, and via Simla from Ladakh, on the road to Zaskar, of value Rs. 25,956. Sapphire is imitated with iolite, kyanite, etc.; hardness affords the best test of the genuineness of the stone. The word sapphire is derived from *sapheiros*, the name of a blue stone amongst the ancients. Most probably the *sapheiros* of the ancients, however, was not our sapphire, but *lapis-lazuli*.

Schorl occurs in the granite and syenite districts of the Peninsula of India.

Spinel, besides spinels properly so called, includes Franklinite and chromite (chromic iron). Spinel ruby and balas ruby are beautiful gems. Pleonaste is an opaque variety of spinel. Spinel is found in Saffragan and Matura, in Ceylon, in Mysore and Burma. *Spinel ruby* or *balas ruby* varies in value according to its cut and colour. Balas ruby is pale-red or rose-red; it varies much in price.

Star-stones are varieties of the corundum class of precious stones,—star-rubies, star-sapphires, and the star-topaz. They have stars of six rays, but are not esteemed by the Singhalese or natives of India.

Topaz occurs in the corundum localities. Oriental topaz is a variety of corundum of a yellow colour, more or less mixed with red. The most esteemed colour is a bright jonquil-yellow, and next a pure lemon-yellow. It is a very beautiful stone, though inferior in value to emerald, ruby, or sapphire. The kind most valued by the jewellers of Europe are brought from the Uralga river. White topaz is a fluo-silicate mixed with silicate of aluminium.

Tourmaline occurs abundantly in Siberia, in Burma, in Dindigul, and in Ceylon, in colours black, brown, blue, green, red, white, and colourless, and exhibiting a dichroism. The tourmalines have many valuable and beautiful forms, made use of in the arts. Rubellite, a variety of tourmaline, is found in Burma and Siberia.

Turquoise, from Central Asia, is a favourite with the Muhammadans of India. Turquoise is the Firozah, HIND., hence Firoza-rang, turquoise blue. It is found at Khojend, in Mawar-al-nahr or Trans-Oxiana, at Shebavek, in Kirman, and in a mountain of Azerbaijan, where the mine was discovered about fifty years before Ahmad bin Abd ul Aziz composed his Treatise on Jewels. He describes the mine at Nishapur as most celebrated from early ages for that particular kind of turquoise entitled *Abu Ishaki*, which, says he, averts evil from those who wear it, conciliates the favour of princes, augments wealth, preserves the sight, ensures victory over an adversary, and banishes all unpleasant dreams. He says the ancient sages, when first they beheld a new moon, immediately after fixed their eyes on the Firozah (Ouseley, Tr. i. p. 211). Turquoise is apt to change colour if brought into contact with acids, musk, camphor, or other scents. Small clear Persian stones at Nishapur in Khorasan sell at 6d. to 20s. each, whilst a fine ring stone will realize from £10 to £40. A perfect stone of the size of a shilling, and of good depth, was sold for £400. It varies from white to a fine azure blue, but it is only the fine blue stones that are of value.

Zircon occurs in alluvium in the Ellore district. Hyacinth of the lapidary and jargon are varieties of zircon. Its pellucid varieties are gems.

—*Prinsep's Oriental Accounts of the Precious Minerals*; Ouseley's Tr.; C. W. King, *Precious Stones*; Emmanuel on *Gems*; Mason's *Burmah*; Tennant's *Ceylon*; Dr. Buist in *Bombay Times*; Tavernier's *Travels*; Niebuhr, *Beschreibung von des Arabien*; Davy's *Ceylon*, p. 20; Pliny, xxxvii., xv., xxiii.; Forbes' *Eleven Years in Ceylon*, ii. p. 97; Wellsted, i. pp. 112, 113; Mr. Streeter; Mr. V. Bull on *Diamonds*, etc.

PREDESTINATION, the Takdir, Kaza, Al-Makaddar, Kismet, and Nasib of the Muhammadans, is an essential doctrine of their creed. Its influence over their everyday life is evidenced by such sayings as, 'There are two days in which a man should not have a fear of death, the one on

which he is not to die, and that on which he is to die. Their resignation to events is supreme. Hindus of the Telingana country attribute every good and every evil act to predestination, and this doctrine is strongly insisted on in the introduction to the ancient Hitopadesa. Most of the eastern Christians, also, entertain a similar belief. Many Muhammadans hold that fate is in some respects absolute and unchangeable, in other respects admitting of alteration. In the former case, it is called al Kaza al Mahkum, meaning the absolute and unchangeable fate, and in the latter, al Kaza al Mubram; and they are guided in their daily life by these views. Nevertheless the doctrines of the Koran and the Hadis or traditions appear to be that the decrees of God, or fate and destiny, are altogether absolute and unchangeable, written in the beginning of the creation on the Preserved Tablet, Allawuh al Mahfuz, in heaven. Again, it is held that God has not predestined the will, though He sometimes inclines it to good, and the devil sometimes inclines it to evil; and the Muhammadan believes that he is to be admitted into heaven only by the mercy of God on account of his faith, and is to be rewarded in proportion to his good works.

PREDIAL SLAVES of British India have also been called a Helot race. The chief of them are the Chooroo of the Panjab, the Chamar of Hindustan, the Mhar of the Mahratta country, Pariahs in the south. These no doubt represent conquered races. The Chamar of Hindustan is round-faced, small-featured, and dark, but without any decided aboriginal feature.

PREJEVALSKY, LIEUTENANT-COLONEL N., author of Mongolia, the Tangut Country; Three Years' Travel in E. High Asia, Lond. 1876; also, From Kulja across the Tian Shan to Lob Nor, London 1879.

PREM DEVI. It was a saying of Bhishma, that where a son does not exist, the daughter should occupy the throne. Prem Devi was on the throne of Delhi before the Muhammadan invasion. In Nepal three females reigned at different times. Rajendra Lakshmi is described as a 'woman of extraordinary character and talents.' In Ceylon, several ranis reigned from time to time. In Rajputana females have governed as regents. Colonel Tod, speaking of the Bundi queen, says her sentiments showed invariably a correct and extensive knowledge, which was equally apparent in her letters, of which he had many. At present (1883) the Begum of Bhopal is reigning.—*Calcutta Review*, pp. 43, 109.

PREMNA, a genus of plants of the natural order Verbenaceæ, and tribe Viticeæ. The following are the principal species of the East Indies:—

- P. esculenta*, Roxb., Chittagong.
- P. barbata*, Wall., Bengal, Nepal, Kamaon.
- P. latifolia*, Roxb., Coromandel.
- P. longifolia*, Roxb., Bengal, Khasya, Assam.
- P. herbacea*, Roxb., Bengal, Peninsula.
- P. procumbens*, Moon, Ceylon.
- P. spinosa*, Roxb., Bengal.
- P. interrupta*, Wall., Sikkim.
- P. scandens*, Roxb., Kandalla, Sylhet.
- P. grandifolia*, Wall.
- P. cordifolia*, Roxb., Kandalla, Penang.
- P. levis*, Wall., Doab.
- P. coriacea*, Linn.
- P. mucronata*, Roxb., Morung, Khasya.
- P. tomentosa*, Willd., Circars.
- P. Savasena*, Buch., Goalpara.

- P. glaberrima*, W. Ic.
- P. integrifolia*, W. Ic.
- P. serratifolia*, W. Ic.
- P. thyrsoidea*, W. Ic.
- P. Wightiana*, W. Ic.

PREMNA HERBACEA. Roxb.

- | | | | |
|------------------------|--------|----------------------|------|
| Bhooi jam, . . . | BENG. | Sheeroodek, . . . | TAM. |
| Bhooni jambooka, . . . | SANKH. | Gunta baringa? . . . | TEL. |
| Siribekku, . . . | SINGH. | | |

A plant of Ceylon and the Peninsula of India. The leaves of *P. esculenta* are eaten as food; also used medicinally.

PREMNA INTEGRIFOLIA. Linn.

Premna hircina, Buch.

- | | | | |
|---------------------|---------|--------------------|------|
| Chamaree, . . . | MAHR. | Ghebu nelli, . . . | TEL. |
| Appel, . . . | MALEAL. | Pinna nelli, . . . | „ |
| Munnay maram, . . . | TAM. | | |

A shrub or small tree, common in India; the timber is only useful for the most common purposes. The leaves have a very unpleasant odour when pressed in the hand, but used by the natives in soups and curries, and a decoction of the leaves is used in colic and flatulence. The root has a somewhat warm and bitterish taste, an agreeable smell, and is prescribed in decoction as a gentle cordial and stomachic in fevers.—*Wight*; *Jaffrey*.

PREMNA LATIFOLIA. Roxb. Nelli chettu,

Peddi-nelli, TEL. A small tree of the Coromandel coast; wood white, firm, and used for various economical purposes. Flowers during the hot season; the leaves have a pretty strong though not disagreeable smell, and are much used in curries by the natives.—*Voigt*.

PREMNA MUCRONATA. Roxb.

- | | | | |
|----------------|-------------|-------------|-------|
| Bankar, . . . | BEAS, RAVI. | Gian, . . . | RAVI. |
| Ganhila, . . . | CHENAB. | | |

A tree which occurs in the Siwalik tract to 3000 feet up to the Ravi.—*Stewart*.

PREMNA PYRAMIDATA. Wall. Kyoona-

lin, BURM. A small tree of British Burma; wood strong, used for weavers' shuttles. A cubic foot weighs 52 lbs. In a full-grown tree on good soil, the average length of the trunk to the first branch is 30 feet, and average girth measured at 6 feet from the ground is 5 feet.—*Brandis' Cal. Cat. Ex.*, 1862.

PREMNA SERRATIFOLIA. D. C.

- | | | |
|----------------------------|----------------------|------|
| <i>P. barbata</i> , Willd. | Munnay-keeray, . . . | TAM. |
|----------------------------|----------------------|------|
- Leaves used similar to those of *P. integrifolia*. The natives are very fond of them.—*Jaffrey*.

PREMNA TOMENTOSA. Roxb.

- | | | |
|--------------------|-----------------|------------------------|
| Kolouttay teak ma- | Boosairu, . . . | SINGH. |
| ram, . . . | ANGLO-TAM. | Nagara chettu, . . . |
| Chambara, . . . | MAHR. | Navuroo, Nagool, . . . |

A small tree of Ceylon, Coimbatore, the Bombay ghats, the Godavery, and the Northern Circars. It has a pretty-looking wood, hard and close-grained, of a brownish-yellow colour, well fitted for ornamental purposes; more a fancy wood than a timber, and is rather scarce; the natives use the sap in some of their ceremonies.—*Roxb.*; *Wight*; *Rohde*.

PREM SAGUR, a Hindi paraphrase of the Bhagavat Purana.

PRESBYTIS. *Illiger*. A genus of monkeys, the Semnopithecus of Cuvier, the Langur and Hanuman monkeys of the Hindus.

- P. entellus*, Bengal Langur.
- P. schistaceus*, Himalayan Langur.
- P. priamus*, Madras Langur.
- P. Johnii*, Malabar Langur.
- P. jubatus*, Neilgherry Langur.

P. pileatus, *Blyth*, Sylhet, Cachar, Chittagong.
P. barbei, *Blyth*, Tiperah Hills.
P. obscurus, *Reid*, Mergui.
P. Phayrei, *Blyth*, Arakan.
P. albocinereus, Malay Peninsula.
P. cephalopterus, *Blyth*, Ceylon.
P. ursinus, *Blyth*, Ceylon.
P. maurus, —, Java.
P. melalophos, —, Sumatra.

Presbytis cephalopterus, *Zimmerman*, *Blyth*, occurs in Ceylon. It is a most gentle creature; has the body black, slightly grizzled; croup, tail, and exterior of thighs albescent, palest on the croup and end of tail; head rufescent-brown, a little tinged with blackish on the sides, and the whiskers and short hair on the chin and lips of a dull white, conspicuously contrasting. Dr. Kelaart designated it as a new species, *Pr. cephalopterus*, var. *b. monticolus*, and the native name he spells *Kallu wanderu*.

Presbytis entellus, *Jerdon*.

P. anchises, *Elliot*.

Musa, CAN. | Hanuman Langur, HIND.
 Bengal Langur, ENG. | Makur, Wanur, . MAHR.

The Bengal langur occurs in Bengal and Central India, prefers forests and highly wooded districts, groves near villages, and occasionally enters towns and plunders the shops of the grain dealers with impunity, as the Hindus of N. India deem it sacrilege to kill one, and in some temples in the west of India it is regularly fed by the priests.—*Jerdon*.

Presbytis Johnii, *Jerdon*.

Sennopithecus Johnii, var. | *S. cucullatus*, *Is. Geof.*
Martin. | *S. hypoleucus*, *Blyth*.
S. Dussumierii, *Schinz*.

The Malabar langur is found in the forests of S. Canara, Malabar, Cochin, and Travancore, but frequents gardens and cultivated woodland. Like others of the genus, it generally, by a noisy and alarmed chatter, gives notice of the presence of tigers, leopards, and other beasts of prey.

Presbytis jubatus (*Sennopithecus Johnii*, *Blyth*), the Neilgherry langur, is of a dark glossy-black throughout. It inhabits the Neilgherries, Annamallay, Pulney, and Wynad, above 2500 feet. It is shy and wary. The fine glossy fur is much prized.

Presbytis priamus, *Elliot*, *Blyth*, *Konde wanderu*, SINGH., the Madras langur, is not confined to the low country in the north of Ceylon. They are seen skirting the Kandyan Hills, and occasionally on the hills. Trincomalee is full of them.

Presbytis schistaceus, *Hodgson*, *Horsf.*, *Blyth*.

Kubup, BHOT. | Kamba Suhu, LEPCHA.
 Langur, HIND. |

The Himalayan langur is found along the whole range of the Himalayas from Nepal to far west of Simla, Naini Tal, Musoorie, the Terai and lower hills of Nepal, and in Kamaon, up to 12,000 feet. They are bold and predatory.

Presbytis thersites, *Blyth*, *Elle wanderu*, SINGH. It is found in Ceylon, in Bintenne, and in the Wanny district. It was considered identical with *Pr. priamus* of the Eastern and Western Ghats of the Peninsula, the Ceylon hanuman, but is distinct from that and the several other allied species which have been confounded under *Pr. entellus*. At Mr. Elliot's suggestion, it has been designated *Pr. thersites*, *Elliot*. Adult male inferior in size to that of *Pr. entellus* (verus) of Bengal, Orissa, and Central India, of a uniform

dusky-grey colour (devoid of fulvous tinge) on the upper parts; face surrounded with white, narrow over the brows, the whiskers and beard more developed than in the other entelloid Indian species, and very conspicuously white. The strongly contrasting white beard is indeed the most striking feature of this Ceylon species, as compared with its near congeners.

Presbytis ursinus, *Blyth*, usually seen in large numbers jumping on the trees, and when disturbed they make a peculiar short howling noise. One was known to have attacked a coolie on a coffee estate carrying a rice bag. Some of the races of Malabar eat the flesh of this monkey, and consider it very delicious food, and some Europeans who have tasted it are of the same opinion.—*Elliot*; *Tennent's Ceylon*, p. 62; *Mr. Blyth's Reports*.

PRESENTS, in oriental customs, are invariably offered by inferiors or subordinates on approaching superiors, and they are usually of money; the superior either simply acknowledges them, or bestows in return articles of dress, or confers the right to certain titles or dignities. The custom was adhered to by Jacob, Genesis xxxii. 13–20 and xxxiii. 10, when about to meet Esau; and by Jacob, in sending his sons to Egypt, xliiii. 11, to propitiate Joseph. There are three articles which, in Japan, always form part of an imperial present. These are rice, dried fish, and dogs. Some also say that charcoal is always included. Why these should have been selected, or what they particularly symbolize, is not known.—*American Exp. to Jap.* p. 429.

PRESERVED PROVISIONS. The chief articles employed for the preservation of organized substances are salt, sugar, oil, charcoal, acetic acid, or pyroligneous acid, and alcohol and salt is used in the curing of fish of different kinds, bacon, hams, etc., in the pickling of pork, and in the corning of beef. Salt possesses great affinity for water, which it abstracts largely from the substance to which it is applied, and to which affinity its power as a preservative agent is mainly due. Sugar is principally employed for preserving fruits, either entire or in the state of jam or marmalade. In the condition of syrup, it operates partly by the barrier which it interposes to the free access of the atmosphere to the surface of the fruit, and partly in consequence of its being a non-nitrogenous substance.

Sardines and anchovies are nearly the only articles put up in oil. It appears to operate in the same manner as sugar. The powerful effect of charcoal retarding putrescence in meat, and even in restoring tainted meat to a state of sweetness, is well known. Its action is due to its property of absorbing gases and effecting their oxidation as rapidly as they are developed from the decomposing meat, and which is made to preserve at least the appearance of freshness. The use of dilute acetic acid or vinegar is confined to the preservation of vegetable substances, and is employed principally by pickle-makers.

Pemmican is the muscular fibre of beef or mutton baked on hot iron plates and reduced to a coarse powder, but in India it is fibrous meat cut into long stripes, and dried in the sun. Vegetables and fruits are now largely preserved freed from their fluid constituents. When vegetables thus prepared are immersed in water for some

time, they swell up, become soft and tender, and resume to a very great extent the appearance, colour, and flavour proper to them in the fresh state. In another mode, the article to be preserved is placed sometimes in the raw state, but generally cooked in a tin canister, the lid of which is soldered down, but is perforated with a small aperture or pin-hole. It is then subjected to the action of either steam, boiling water, or a muriate of lime bath, until the contents of the canister, if not previously dressed, have become about two-thirds cooked. The aperture in the cover is then closed, and the canister and its contents are once more submitted for a shorter period—that is until the article is completely dressed—to the operation of heat. As soon as it has become cold, the canister is covered over with a coating of paint; its preparation is then complete.—*Hassell*.

PRESERVES, etc.

Conserve, FR.	Conserva, IT, SP.
Eingemacht, . . . GER. ?	Rêchël, TURK.

The Chinese candy many things which are not considered fit for such purposes elsewhere, as millet seeds, bamboo shoots, slices of the lily root, etc.; these are hawked about the streets. Ginger root, preserved in sugar, is the most common sweetmeat exported; it is made of the tender roots of the ginger plant (*Zingiber officinalis*), and when good has a bright appearance, a dark-red colour, and is somewhat translucent. If the roots are old, the conserve will be stringy, tough, and tasteless. Much of this kind of sweetmeat is carried to India for consumption there, and for re-exportation to England and the Continent. The export to the United States is considerable, also to Sydney, South America, etc. Other kinds of conserves, as whampee, guava, and pear, jelly, citron, kumquat, oranges, etc., are also sent abroad. In India, the mango, apple, pear, melon, quince, lemon, amla (*Embelica officinalis*), halela (*Beleric myrobalan*), carrot, ber, ginger, are all made into preserves. There are preserves also of lemon, Bokhara plum, limes, tomato, rhubarb, cherry (gila, sara, siya), peach, and water-melon. — *Honourable Mr. Morrison's Compendious Description*.

PRESIDENCY is the term by which, in India, the British designate the respective governments of Bengal, Madras, and Bombay. It has its origin in the circumstance of the administration there being conducted by a council, the governor for the time being holding the office of president.

The Presidency of Bengal (or technically Fort William in Bengal) has become so largely extended, as to require that the local government of parts of the original presidency should be delegated by the Governor-General of the extended presidency to Lieutenant-Governors. The Bengal Civil Servants are disseminated throughout Northern and Eastern India,—in (1) the Lieutenant-Government of Bengal Proper, in (2) the North-Western Provinces (of Bengal) and Oudh, (3) the Panjab, (4) Rajputana and Ajmir, (5) Central India, (6) the Central Provinces, (7) Hyderabad and Berar, (8) Mysore and Coorg, (9) Assam, (10) Manipur, (11) British Burma, (12) the Andaman and Nicobar Islands. All these distinct governments, under Lieutenant-Governors, Commissioners, Superintendents, or Native Princes, with Political Agents as their advisers, are supplied with British officials from the Bengal Civil Service, and are subject to

the superior control of the Governor-General in Council. The Presidencies of Madras and Bombay cover the remainder of India, and have their own distinct Civil Services.

Although there are 14 separate governments in India, including Madras and Bombay, the 12 divisions of Bengal Presidency have no correspondence with the Secretary of State except through the Governor-General. Bombay and Madras, as separate presidencies, retain that distinction.

The three presidencies of Bengal, Madras, and Bombay have each an executive and a legislative council, over which the senior member, as Governor, presides; and letters from the Court of Directors of the E. I. Company were addressed to 'our President in Council,' from which the three divisions came to be called the Bengal, Madras, and Bombay Presidencies. These councils are in direct communication with the Secretary of State for India, who is one of the principal ministers of Great Britain.

PRESTER JOHN. Aung Khan of the Keraite Mongols, celebrated in Europe under the name of Prester John, or Presbyter John, was a contemporary of Chengiz Khan, whom, at the instigation of jealous enemies, he attempted, but failed, to destroy. He was of the Christian religion, contemporary with the emperor Alexius Comnenus of Constantinople, to whom he addressed a letter descriptive of his power. So many fables have been related of him, that his very existence has been doubted. But many particulars of this letter are confirmed by Marco Polo, Sir John Mandeville, and others. In that letter he described himself as a Christian, ruling over the three Indies, from the furthestmost, where Thomas is bound, to Babylon. These were divided into 72 provinces, some of them Christian, and each with a king. He mentions that he had vowed to visit the sepulchre of our Lord with a great army, and that his army was preceded by 13 crosses of gold and precious stones. Dr. Oppaert, in an essay read before the Ethnological Society, describes Prester John as a title of four Tartar sovereigns or Kaitach, belonging to the Kitai Tartar, and one of the name Yeliutaabi, who defeated the Sultan Sanjar, was the founder of the realm of Kara Kitai. After his conquest of Eastern and Western Turkestan, he became known by the title of Gur Khan, and had his capital at Bala Sagun. The last of the princes who took this title of Prester John was named Kushluh, who reigned 1213 to 1218, and was defeated and slain by Chengiz Khan.—*Layard's Ninereh*, i. p. 251; *Elliot*, p. 498; *Dr. Oppaert*; *Schuyler*, p. 122.

PRETA, a spirit; Preta Srad'ha, the first year's obsequial ceremonies to a deceased Hindu. There are fifteen Preta Srad'ha. The Hindu Shastras or sacred books teach that after death the soul becomes preta, viz. takes a body about the size of a person's thumb, and remains in the custody of Yama, the judge of the dead. At the time of receiving punishment, the body becomes enlarged, and is made capable of enduring sorrow. The Srad'ha, performed by a son, delivers the deceased, at the end of a year, from this state, and translates him to the heaven of the Pitri, where he enjoys the reward of his meritorious actions, and afterwards, in another

body, enters into that state which the nature of his former actions assign to him. If the *Srad'ha* be not performed, the deceased remains in the preta state, and cannot enter another body. This view of a future state is almost similar to that in the 325th and six following lines of Virgil, in the 6th book of his *Æneid*, as well as of the 28th ode of the 1st book of Horace.—*Ward*, ii. p. 139.

PRETYA-BHAVA. **SANSK.** This is often rendered the condition of the soul after death, but means really the state on earth. The present life, according to Indian notions, is Bhava, birth and growth; Pretya, after a previous death. In Hindu books, a life after death is not unfrequently alluded to, but it is more for the goods of this world, for strength, for long life, a large family, food, and cattle, that the favour of the gods is implored.

PRIAPUS. **LAT.** The Phallus of the Greeks, and Lingam of the Hindus. In the south of France it was worshipped under the title of St. Foutin; of St. Regnaud, in Burgundy; and as St. Cosmo, in the south of Italy.—*Tod.* See Lingam.

PRICE, MAJOR DAVID, an officer of the E. I. Co. in the Bombay army. He was long in political employ. He wrote in four volumes, *Memoirs of the Principal Events of Muhammadan History from the Death of the Arabian Legislator to the Establishment of the Moghul Empire in Hindustan*, London 1811-21; also *History of Arabia antecedent to the Birth of Mahomed*, London 1824.

PRICKLY PEAR, *Opuntia Dillenii*, *Haworth*, *Cactus Indicus*, *Roxburgh*, *C. Dillenii*, *Ker*, also called the hedge prickly pear, is a native of America, but is now growing over all India, and is called Nag-phana, or snake-hooded. It has large yellow flowers, and fruits throughout the year, but the fruit is not used in India. From the severe pain its prickles occasion, its vitality, and the rapidity of its growth, it is a very troublesome plant to eradicate. After cutting it, put it into water, and sink it to the bottom with stones. In 24 hours the water will begin to get thick and muddy. In two days it smells sour, on the third a scum rises, and the whole substance of the prickly pear is decomposed. It then makes good manure, and will not grow or vegetate. Another method of destroying it is to cut a number of the shrubby plants that usually accompany it, spread these over the ground to the height of a foot or two, lay the prickly pear on the top, and leave the pile to dry for some days, then set fire to the heap. If too much of the prickly pear be piled up, it will require a second firing. Potass may be prepared from the ashes. If prickly pear be cut and left on the ground, it very soon begins to grow again.

PRIEST and **Priestly Caste** are terms loosely applied to the Brahmins of India; the name is occasionally given to Buddhists. Every Brahmin who professes a knowledge of the formula of his religion may become a priest, and such are distinguished by the appellations, *Purushita*, *Acharya*, *Sudushya*, *Brahma*, and *Hota*. The first appears to be the principal ceremonial, the last the sacrificial, priest. According to Mr. Ward, the first-mentioned is the most advantageous order, as the rich, who are unwilling to fast, bathe in cold water, and perform further ablutions and sacrifices, bestow fees upon the *Purnahita* to

perform these ceremonies for them. The five artisan castes, and all the non-Aryan races, have priests of their own, and not Brahmins. Hindu priests have no official garments.—*Cole. Myth. Hind.* p. 392.

PRIMATES, a group of the mammalia, comprising the quadrumana and cheiroptera. See Mammalia.

PRINSEP, JAMES, one of a family, several of whom obtained employment or sought a career in India. James was for some time secretary to the Asiatic Society of Bengal, and did more to extend the knowledge of eastern numismatics than any other individual up to his time (1873). The results of his researches have been given to the world in two volumes, entitled *Indian Antiquities* (Murray, 1858), edited by Mr. Edward Thomas; *Useful Tables on Indian Metrology and Chronology*. The marvellous ingenuity which he displayed in deciphering the inscriptions of Asoka and other hitherto unread documents, revolutionized the whole character of Indian archaeology.

Charles R. Prinsep, a barrister in India, and formerly of the Middle Temple, is the translator of Say's Political Economy. Henry Toby Prinsep is the author of several pamphlets on Indian questions, also of various statistics published in the Asiatic Society's Journal, and of a Narrative of Political and Military Transactions of British India under the Administration of the Marquis of Hastings, 1813 to 1823, London 1820, 1825; *Origin of the Sikh Power in the Panjab*, and *Political Life of Maharaja Ranjit Singh*, Calcutta 1834.

PRINSEPIA UTILIS. *Royle.*

Bekkul,	BEAS.	Rari, Jinti, . .	CHENAB.
Gurinda, CHAM.,	JHELM.	Bhekling, . .	KANAWAR.
Arund,		Bekkli, Karangura,	RAVI.
Tatua, Phoolwara,	CHENAB.	Bekkar, Bekrul,	SUTLEJ.

A common North-west Himalayan plant, and found at 8000 feet in Sikkim, also in Kaghan and the Sutlej valley between Rampur and Sungnam at an elevation of 4000 to 8000 feet. Used for hedges; its seeds yield an edible oil; wood used for walking-sticks.—*Stewart.*

PRINTED CLOTHS. The art of calico-printing is one which was common to the ancient Egyptians and Indians, and is still largely practised by the latter, and with a skill which produces much to be admired, even in the midst of the productions of the world, and after many attempts have been made to improve an art certainly imported from the east. Pliny was acquainted with the art by which cloths, though immersed in a heated dyeing liquor of one uniform colour, came out tinged with different colours, and afterwards could not be discharged by washing. The people of India were found practising the art when first visited by Europeans, and Calicut on the Malabar coast has given its name to calico.

The large cotton chintz counterpanes, called pallampoops (palangpooh), which from an early period have been made in the East Indies, are prepared by placing on the cloth a pattern of wax, and dyeing the parts not so protected.

The colours used in calico-printing are derived from all the three kingdoms of nature, but it seldom happens that solutions, infusions, or decoctions of these colours admit of being applied at once to the cloth without some previous preparation, either of the cloth itself, or of the colouring

material. It is often necessary to apply some substance to the cloth which shall act as a bond of union between it and the colouring matter. The substance is usually a metallic salt, which has an affinity for the tissue of the cloth as well as for the colouring matter when in a state of solution, and forms with the latter an insoluble compound. Such a substance is called a mordant (from the Latin *Mordere*, to bite), a term given by the French dyers, under the idea that it exerted a corrosive action on the fibre, expanding the pores, and allowing the colour to be absorbed. The usual mordants are common alun and several salts of alumina, peroxide of tin, protoxide of tin, and oxide of chrome. These have an affinity for colouring matters, but many of their salts have also a considerable attraction for the tissue of the cloth, which withdraws them to a certain extent from their solutions. Mordants are useful for all those vegetable and animal colouring matters which are soluble in water, but have not a strong affinity for tissues. The action of the mordant is to withdraw them from solution, and to form with them, upon the cloth itself, certain compounds which are insoluble in water. In European cloth-printing, although the methods employed are numerous, and the combinations of colours and shades of colour almost infinite, yet each colour in a pattern must, in the present state of the art, be applied by one of six different styles of work. These are termed—1. the madder style; 2. printing by steam; 3. the paddling style; 4. the resist style; 5. the discharge style; and 6. the China-blue style. By the proper combination of two or more of these styles, any pattern, however complicated, is produced. The processes actually required for finishing a piece of cloth are numerous, as, for example, in producing a red stripe upon a white ground, the bleached cloth is submitted to nineteen operations, as follows:—1. Printing on mordant of red liquor (a preparation of alumina) thickened with flour, and dyeing; 2. ageing for three days; 3. dunging; 4. wincing in cold water; 5. washing at the dash-wheel; 6. wincing in dung-substitute and size; 7. wincing in cold water; 8. dyeing in madder; 9. wincing in cold water; 10. washing at the dash-wheel; 11. wincing in soap-water containing a salt of tin; 12. washing at the dash-wheel; 13. wincing in soap-water; 14. wincing in a solution of bleaching-powder; 15. washing at the dash-wheel; 16. drying by the water extractor; 17. folding; 18. starching; 19. drying by steam.

Indian dyers apply the mordants both by pencils and by engraved blocks. Blocks are used throughout India, but silk handkerchiefs had the parts where the round spots were to be, tied up with thread, so as not to be affected by the dye-liquors, and it was from this process of tying (bandhna) that they received the name of bandana. The cloth-printers at Dacca stamp the figures on cloth which is to be embroidered. The stamps are formed of small blocks of kantul (*Artocarpus*) wood, with the figures carved in relief. The colouring matter is a red earth imported from Bombay, probably the so-called Indian earth from the Persian Gulf. Though the art is now practised to much perfection in Europe, the Indian patterns still retain their own particular beauties, and command a crowd of admirers. This is no doubt due in a great

measure to the knowledge which they have of the effects of colours, and the proportion which they preserve between the ground and the pattern, by which a good effect is procured both at a distance and on a near inspection. Printed cloths are worn occasionally, as in Berar and Bundelkhand, for sarrees; and the ends and borders have peculiar local patterns. There is also a class of prints on coarse cloth, used for the skirts or petticoats of women of some of the lower classes in Upper India; but the greatest demand for printed cloths is for palempores, or single quilts. In the costlier garments woven in India, the borders and ends are entirely of gold thread and silk, the former predominating. Printing in gold and in silver is a branch of the art which has been carried to great perfection in India, as well upon thick calico as upon fine muslin. The size which is used is not mentioned, but in the Burmese territory the juice of a plant is used, which no doubt contains caoutchouc in a state of solution.

There is a branch of cotton-printing carried on at Sholapur. The patterns of various kinds are printed upon coarse cloth, and are used for floor-coverings, bed-coverlets, etc. etc., the latter by the poorer classes. The colours are very permanent, and will bear any amount of washing, but are confined to madder reds, and browns, black, dull greens, and yellows. See Dyes.

The object of calico-printing is to apply one or more colours to particular parts of cloth, so as to represent a distinct pattern, and the beauty of a print depends on the elegance of the pattern and the brilliancy and contrast of the colours. The processes employed are applicable to linen, silk, worsted, and mixed fabrics, although they are usually referred to cotton cloth or calico. There are various methods of calico-printing, the simplest of which is block-printing by hand, in which the pattern or a portion thereof is engraved in relief upon the face of a block of sycamore, holly, or pear-tree wood, backed with deal, and furnished with a strong handle of boxwood. A machine, called the perrotine, in honour of its inventor, M. Perrot of Rouen, is in use in France and Belgium as a substitute for hand-block printing. Copperplate printing similar to that used in the production of engravings, has also been applied to calico-printing. The invention of cylinder or roller printing is the greatest achievement that has been made in the art, producing results which are truly extraordinary; a length of calico equal to one mile can by this method be printed off with four different colours in one hour, and more accurately and with better effect than block-printing by hand. By another method of calico-printing, namely, press-printing, several colours can be printed at once. The cloth to be printed is wound upon a roller at one end of the machine, and the design, which is formed in a block of mixed metal about 2½ feet square, is supported with its face downwards in an iron frame, and can be raised or lowered at pleasure. The face of the block is divided into as many stripes, ranging crossways with the table, as there are colours to be printed.—*Royle's Arts of India.*

PRINTING.

Taba, Chapa, AR., HIND.	Imprenta,	SP.
Impression,	FR.	Atche,
Drucken,	GER. ?	TAM.
Impressione,	IT.	Basma,
		TURK.

Sir John Davis is of opinion that the art of printing, the composition of gunpowder, and the magnetic compass, which are justly considered as three of the most important inventions or discoveries, had their first origin in China. Their printing is by a system of stereotype, the types being made from the pear-tree wood, called by them ly-mo. In the beginning of the 10th century their printing was invented, and in A.D. 932 that mode of multiplying copies of books received the imperial sanction, a printed imperial edition of all the sacred works having been then published. The art was not invented in Europe till 500 years after this. Marco Polo speaks much of the stamped paper money of the Chinese; and he must have seen their printed books. Printing with moveable types (made of terra-cotta) was invented in China by a smith named Pishing, before the middle of the 11th century, but the invention does not seem to have been followed up. Their wood-printing was known at least as early as A.D. 581, and about 904 engraving on stone for the press was introduced. Paper in China is made from bamboo, from the bark of mulberry, of a hibiscus (*Rosa Sinensis*), and of the tree called chu (*Broussonetia papyrifera*). All bark-paper is strong and tough; it has rays crossing it, so that when torn you would think it was made of silk fibres. This is why it is called Mien-chi, or silk paper.

Printing was known in Europe in A.D. 1428. The art of printing was introduced into India by the Goa Jesuits about the middle of the 16th century, but at first they printed only in the Roman character. Father Estevao (i.e. Stephens, an Englishman), about 1600, speaks of the Roman character as exclusively used for writing Konkani, and the system of transcription which he uses in his Konkani grammar (*Arte de lingua Camarin*) and *Purana* is really worthy of admiration. It is based on the Portuguese pronunciation of the alphabet, but is accurate and complete, and has been used by the numerous Konkani Roman Catholics of the west coast of India up to the present time. In the 17th century the Jesuits appear to have had two presses at Goa,—in their college of St. Paul at Goa, and in their house at Rachol. Few specimens of their work have been preserved, but there is ample evidence that they printed a considerable number of books, and some of large size. About the end of the 17th century, it became the practice at Goa to advance natives to high office in the church, and from that time ruin and degradation began, and the labours of the early Jesuits disappeared. Literature was entirely neglected, and the productions of the early presses were probably used as waste-paper by the monks, or left to certain destruction by remaining unused and uncared for on their bookshelves. There is, however, in the Cochin territory a place quite as famous as Goa in the history of printing in India, often mentioned by travellers in the 17th and 18th centuries, Ambalacatta (i.e. Ambalakkadu, or Churchwood). The place still remains as a small village with a scanty population of schismatic Nestorians; it is inland from Cranganore, and a few miles to the north of Angamali. The Jesuits appear to have built here a seminary and church dedicated to St. Thomas soon after 1550, and in consequence of the result of the Synod of Udayompura, presided over by

Alexius Manazes, Archbishop of Goa, in 1599 it became a place of great importance to the mission. Sanskrit, Tamil, Malayau, and Syriac were studied by the Portuguese Jesuits residing there with great success, and several important works were printed, of which, however, we have only the names left us, as recorded by F. de Souza and others, and still later by Fr. Paulinus. The last tells us that—'Anno 1679, in oppido Ambalacatta in lignum incisi alli characteres Tamulici per Ignatium Aichamoni indigenam Malabarensen, iisque in lucem prodit opus inscriptum: Vocabulario Tamulio com a significaco Portugueza composto pello P. Antem de Proenca da Comp. de Jesu, Miss de Madure.' The first Malabar (Tamil? Malayalam?) types had been cut by a lay brother of the Jesuits, Joannes Gonsalves, at Cochin, in 1577. Ambalacatta was destroyed by order of Tipu, when his army invaded Cochin and Travancore. He spared neither Christians nor Hindus, and to him attaches the infamy of destroying most of the ancient Sanskrit MSS. which time had spared in South India. Brahmans have yet stories current, how in those times their ancestors had to flee to the forests with a few of their most precious books and possessions, leaving the remainder to the flames.—*Trübner's Oriental Record*.

Tamil types seem, however, to have been cut at Amsterdam in 1678, to express the names of some plants in the large work, *Horti Indici Malabarici*. Ziegenbalg mentions, however, that they were so bad that even the Tamils themselves could not make them out. It would appear that the next attempt was made at Halle, about 1710, to supply the Tranquebar Mission. Fenger says, 'The people there, though unacquainted with the Tamil language, succeeded in making some Tamil letters, which they hastily tried and sent to Tranquebar, where the first part of the New Testament, as well as other things, was printed with them. This sample, the very first thing ever printed in Tamil characters, was the Apostles' Creed, and the friends at Halle when they despatched it with the printing-press, requested soon to be required by a copy of the New Testament in Tamil.' The printing of the New Testament was completed in Tranquebar in 1715. The type first cut at Halle is about equal to the size called English. Smaller founts were cut afterwards. A specimen is given of a part of Arndt's *True Christianity*, printed at Halle in 1751. Founts of type were subsequently cut in India. Printing was carried on both on the Continent and in Ceylon. In 1761 the Madras Government allowed the Vepery missionaries the use of a press taken at Pondicherry. Tamil typography owes its present excellence mainly to Mr. P. R. Hunt, of the American Mission Press. With much labour, he superintended the cutting of the punches of several founts; the smallest size (brevier) he had prepared in America. He produced the smallest vernacular edition of the Scriptures ever yet issued in India. The American press has also raised the standard of printing throughout the Tamil country. The Rev. W. Taylor states that up to 1835 the only Tamil works printed by natives were the Kural and some poetry by Auvaiyar. In that year (15th September) Sir Charles Metcalfe removed the restrictions on printing, and soon afterwards native presses began to be established. In 1863, there were ten native

presses in Madras, printing in Tamil, on a very small scale. According to Hindu custom, related families dwell together, and a wooden printing press was owned in common; some members acting as printers, others attending to sales. This indeed was the early practice in Europe. Hallam says, 'The first printers were always booksellers, and sold their own impressions. These occupations were not divided till the early part of the 16th century.' In 1872, three or four native printers had iron presses, and even claimed to hot-press their sheets. Some books printed by them were of very fair workmanship.

The very first work printed in Bengali was issued from a press at Hoogly in 1778. It was a Bengali grammar by Nathaniel Brassey Halhed, B.C.S.; and the types for it were actually prepared by the hands of Lieut. C. Wilkins, of the Bengal army, afterwards Sir Charles Wilkins, the celebrated Sanskrit scholar. The first native who learned type-cutting was a blacksmith of the name of Panchanan, who was specially instructed in that art by Lieut. Wilkins himself. This man prepared the first fount of Bengali types for the Baptist missionaries, at Serampur, at the rate of 1 rupee 4 annas per letter. In 1875, the second book in Bengali was published by the E. I. Co.'s press. When Mr. Foster's Bengali translation of Lord Cornwallis' Regulation of 1793 was printed at the same press, a new set of types had been made, vastly superior to its predecessor. In 1803, the Serampur missionaries prepared type in Deva Nagri, and on the 28th May 1818, issued the first Bengali newspaper, called Samachar Darpan. The Samachar Darpan was preceded by a Bengali monthly magazine, designated the Dig-darshan. Shortly afterwards the Timir Nasbak was published in Calcutta by a Bengali, but it died in a short time. The Samachar Darpan, or The Mirror of News, was a hebdomadal, and was printed and published at Serampur. Its first editor was the late well-known John Clark Marshman,—Father John, as he was irreverently dubbed by the English press of that time; and the newspaper, after a protracted existence of nearly a quarter of a century, ceased to appear in 1841. The Governor-General, the Marquis of Hastings, according to the Rev. J. Long, on the first issue of the paper, wrote with his own hand to the editor expressing his entire approval of it. And in public his lordship is said to have avowed that it was 'salutary for the supreme authority to look to the control of public scrutiny.'

An Agra newspaper of 1870 says there were then twenty-four mission presses in India, Ceylon, and Burma. These had published in the course of the last ten years no fewer than 3410 separate works, mostly of a Christian and educational character, in 81 languages and dialects. In the year 1870, there were six printing offices in Yezo alone (now called Tokio, i.e. Eastern Capital). They turn out elementary school-books to meet the large demands of this progressive people, to be used as the means for acquiring a knowledge of English and other European languages. None but their own people are employed. They publish newspapers in their own characters, but the type is cast on a regular body, to English standard, and in a Japanese type-foundry at Nangasaki. The native characters consist of Chinese, and the Japanese 'Hirakana' and 'Kata-

kana.' The Chinese characters are arranged in cases with very narrow divisions the width of the body of the type; these are placed in the divisions on their feet, with the face upwards.—*Preface to Grammatica Damulica; History of the Tranquebar Mission; Royle's Arts, etc., of India; Pennant's Hindoostan*, i. p. 132; *M'Culloch's Dictionary*; *Julien in Jour. Asiat.* p. 509; *Chin. Moderne*, p. 626; *Yule, Cathay*, i. p. 219.

PRION DESOLATUS, a petrel of the Kerguelen Land. It is a small bird, and known to seamen as the whale bird, from accompanying the whales. *P. pachyptila* is also the whale bird of sailors.

PRIONODON GRACILIS, *Horsfield*, a feline form (*Felis gracilis*, Delundung of the Javanese), placed in a separate section under the name of *Prionodontidae*, between *Felis* and *Viverra*. (Zoological Researches in Java.) In Blambangan it inhabits the extensive forests which cover that district.

PRIONODON PARDICOLOR. *Hodgson*.

Zik-chum, BUOT. | Suhya, LEPCHA.

Is the tiger civet, a very beautiful animal of the S.E. Himalaya, Nepal, and Sikkim. Jerdon had one which he domesticated, and it became playful.—*Jerdon*.

PRISHADHRA, a son of Manu Vaivaswata, who killed the cow of his religious teacher, and by that menial act became a Sudra.—*Dowson*.

PRISTIDÆ, the saw-fish family of fishes of the genus *Pristis*. There are—

Pristis Perrotteti, *M. and H.*, E. and W. Indies, Archipelago, Red Sea.

P. pectinatus, *Lath.*, Tropical Seas.

P. zysron, *Blkr.*, East Indies, Archipelago.

P. cuspidatus, *Lath.*, East Indies.

PRISTIPHORIDÆ, a family of fishes of the *Pristiophorus* genus, there are—

Pristiophorus cirratus, *Lath.*, Australia.

P. nudipinnis, *Gthr.*

P. Owenii, *Gthr.*, —?

P. Japonicus, *Gthr.*, Japan.

PRISTIPOMA GUORACA. *C. and V.*

Perca grunniens, *Foster*. | *Anthias grunniens*, *Bloch.*,
Guoraka, *Russell*. | *Schneider*.

This fish is one foot long. It inhabits the Isle of Tanna, Batavia, Coromandel, and Mahé (fresh water). Its air-vessel is very thin, from which its isinglass is of little value.

PRISTIS ANTIQUORUM, a huge saw-fish of the eastern coast of Ceylon. Two other species are found in the Ceylon waters, *P. cuspidatus* and *P. pectinatus*. *Squalus pristis* is the saw-anouted shark.—*Tenison's Ceylon*, p. 325.

PRITCHARDIA PACIFICA. This palm, throughout the Polynesian islands, is held to be exclusively the property of the aristocracy, and not allowed to be devoted to common purposes by the lower classes, like the species which it so much resembles.—*Seyman*.

PRITHI or Kunti, daughter of Sura, a Yadava prince, who gave her to his childless cousin Kuntibhoja, who brought her up. In Hindu mythology, a sage named Durvasa, who was living in her father's house, gave her a charm, by which she was to have a child by any god she liked to invoke. She summoned the sun, and her child was born armed with cuirass and lance. Afraid of the anger of her relatives, she exposed her child in the Jumna, where it was found by Adi Ratha,

charioteer of Dhriti Rashtra, and nurtured by his wife Radha, and called therefore Radheya.

PRITHI RAJ, son of Rana Raemul, the troubadour of Mewar. After several gallant adventures, he was poisoned by Pabhu Rao, chief of Sirohi, and Tara Bai immolated herself on the pyre, and their monument is to be seen near the temple of Mama Devi, overlooking the road leading to Marwar.—*Tod's Rajasthan*, i. p. 673.

PRITHI RAJA, also written Prithivi Raja and Pritwi Raja, a Rajput prince of the Chauhan tribe, under whom the Tomara and Chauhan tribes were united. Shortly before the time of Shahab-ud-Din, the four greatest kingdoms in India were—Dehli, then held by the Tomara Rajputs; Ajmir, by the Chauhan; Kanouj, by the Rahtor; and Gujerat, by Baghela, who had supplanted the Chalukya dynasty. But the Tomara chief dying without male issue, his grandson Prithivi, raja of Ajmir, united the Tomara and Chauhan under one head. As the raja of Kanouj was also a grandson of the Tomara chief by another daughter, he was mortally offended at the preference shown to his cousin; and the wars and jealousies to which this rivalry gave rise, contributed greatly to Shahab-ud-Din's success in his designs on India. Prithi Raja was born in the year 1154, and was sixteen years of age when he succeeded his maternal grandfather on the throne of the Anango. The first princess married by Prithivi was the daughter of the Dahima of Biana, a city the castle of which was built on the topmost peak of Druinadaher. He enlarged the circle of his alliances, till there gathered round his throne 108 chiefs of high rank, and in the height of his power he celebrated the Aswa Medha as a claim of empire. By one account, it was on the occasion of this ceremony that Prithivi, in 1175, carried off the princess Sanjogata in open day from the capital of Jye-chand a feat, the heroism of which forms the subject of the Kanouj Kandh of the Prithivi Raja Chauhan Rasa of the poet Chand. The princess of Kanouj was not only remarkable for her personal charms, but formed the most perfect model of Rajput female character in her day. Her father, claiming empire, was being served by princes of his race, but as Prithivi Raja did not appear, the Kanouj king erected a mocking, ill-shapen image of him. The princess Sanjogata, however, threw her bridal garland over the image, and Prithivi Raja, hearing of it, successfully carried her off, but with the loss of his best chiefs.

Shahab-ud-Din's first attack on Prithivi was A.D. 1191, A.H. 587. The armies met at Tirouri, between Tanesar and Karnal, where most of the contests for India have been decided. While he was engaged in the centre of his army, the Hindus outflanked him; both wings of his army gave way. The rout was complete, and his army was pursued for forty miles, and Shahab settled at Ghazni, where, as he said, he never slumbered in case or waked but in sorrow and anxiety. After two years (A.D. 1193, A.H. 589) he returned to India with an army of Turk, Tajak, and Afghan. Prithivi again met him on the banks of the Caggar with a vast army, swelled by numerous allies, who were attracted by his former success. They allowed themselves to be surprised one morning at daybreak, but recovered their position and advanced against the Muhammadans in four lines. Shahab-ud-Din retired, keeping his men in hand,

till an opportunity occurring, he charged the Hindu army at the head of 12,000 chosen horse in steel armour, and Prithi's prodigious army, once shaken, like a great building, tottered to its fall, and was lost in its own ruins. The Viceroy of Dehli and many other chiefs were slain on the field, and Prithivi Raja, being taken in the pursuit, was put to death in cold blood. Then followed scenes of devastation, plunder, and massacre that have too often been enacted in Dehli. The bard Chand remained to sing the requiem of his nation's fall. He was the last heroic Hindu poet of India, and was the author of the Prithivi Raja Chauhan Rasa, containing an account of Prithivi Raja. It has many books, of which the Kanouj Kandh contains the history of Sanjogata Jye-chand.

The chief of the Chauhan Rajputs in the Ulwar district of Raht claims to be the living representative of Prithi.—*Elph*. pp. 313, 314; *Brigg's Ferishta*, i. pp. 173-177; *Tr. of Hind.* ii. p. 164; *As. Res.* ix. pp. 77, 109, 118, 168, 170.

PRITHIVI or Urvi, the goddess of the earth, is by some termed a form of Lakshmi, by others of Parvati. Her husband is Prit'hu, produced by churning the right arm of a deceased tyrant who had died without issue, that he might have a posthumous son, who is represented as a form of Vishnu. As a form of Lakshmi, Prit'hivi is the Indian Ceres. Daily sacrifices are offered to her. The Hindus divide the universe into ten parts, to each of which a deity is assigned. Prit'hivi is the goddess of the earth. Viswakarma, the artificer of the universe, that is, the lord of creation, assuming that character, moulded the earth, and it became Prit'hivi-conspicuous; and that name, Prit'hivi, is therefore assigned to the earth. In Hindu mythology, Urvi means broad and wide; the earth-goddess is typified as a cow, which yields to every class of beings the milk they desired as the object of their wishes. In the Vedas the earth is personified as the mother of all beings, and is invoked together with the sky. In the form of a cow, Prit'hivi was milked by Swayambhuva, grand ancestor of Prit'hu, who so employed him. Prit'hivi, as a personification of the earth, also represents patience; the Hindus refer to the earth, or Prit'hivi, proverbially, as an example of patience or forbearance, permitting her bowels to be ripped open, her surface lacerated, and suffering every indignity without resentment or murmuring. She is quoted also as an example of correctness, as returning good for evil. Prit'hivi Pati, i.e. lord of the earth, is a title conferred on terrestrial or real, as well as mythological sovereigns. In the latter sense he is deemed the architect of the universe, and chief engineer of the gods. He revealed the fourth Upaveda in various treatises on sixty-four mechanical arts, for the improvement of such as exercise them; and he is the inspector of all manual labours and mechanical arts. The goddess Prit'hivi is also called Bhu-Devi, also Bhuma Devi, names of the earth. Bhu-Devi, in Hindu mythology, is the terrestrial name of Parvati, as goddess of the earth. As the names of Diana were varied to suit her various forms, she being Luna in heaven, Proserpine or Hecate in hell, so her archetype, the Hindu Parvati, is the heavenly Bhavani, on earth Bhu-Devi, and Patala-Devi as consort of the regent of the infernal regions. Bhu-Deva, as spouse of the earthly goddess, is a name of Siva.

—*As. Res.* vi. p. 502; *Hindu Infanticide*, p. 28; *Coleman*, p. 102; *Moor*, p. 113.

PRITHU, the first king who formed towns, taught the arts, taught cultivation, and is fabled by the Hindus to be married to Prit'hivi, a name for the earth. Prit'hu is said to have been grandson of Swayambhuva, the Hindu Noah. He had seven sons, one of whom, Agnidru, got Jambu Dwipa or India. Bharata, great-grandson of Agnidru, got from the Himalaya to the sea, and called it Bharata Varsha. Another account calls Prithi or Prithi Vainya, son of Vena, son of Anga. According to the Vishnu Purana, he was the first king, had universal dominion, and from him the earth was called Prit'hivi. He is fabled to have been produced from the right arm of the body of his dead father. He milked the earth, from which all sorts of corn and vegetables were produced, the earth probably being typified as a cow yielding to all mankind the objects they desired.—*Wilson*; *Dowson*.

PROBALONGGO or Probolinggo is a district in East Java, the richest sugar-producing district in the island, and its inhabitants are principally Madurese. The south-western side of the plain of Probolinggo is bounded by the Tengger mountains.

PROCAPRA GUTTUROSA. —?

Antelope gutturosa, <i>Pallus</i> .	Whang yang.
Dzeren.	Yellow goat of the Chinese.
Hoapng yang.	

Is nearly $4\frac{1}{2}$ feet in length, and $2\frac{1}{2}$ feet high at the shoulder: the body also is large and corpulent, and the legs shorter than is common to the antelopes in general; the horns are black, lyrate, and marked to within a short distance of their points, with prominent transverse rings; the sub-orbital sinuses are small. On the prepuce of the male is a bag about the size of a hen's egg, which contains a waxy substance similar to that produced in the analogous organ of the musk animal, but without any kind of odour. They inhabit the dry arid deserts of Central Asia, Tibet, China, and Southern Siberia, particularly the great desert of Gobi, and prefer the most sandy and stony plains, feeding upon such scanty herbage as these localities supply, and avoiding water, to which they appear to entertain a marked aversion. They are remarkably swift, take prodigious leaps, and when frightened will occasionally pass over 20 or 25 feet at a single bound. In spring and summer they form small families, which live apart from one another, but in the beginning of winter they unite in large flocks, always under the guidance of an experienced old buck. They never run, even when pursued, in a confused crowd, but form single files, and follow closely in the footsteps of their leader. They rarely emit any voice. When taken they are easily tamed, and appear to have rather a predilection for the domestic state, often mixing with flocks of sheep, and approaching human habitations during the severity of the winter season. Their flesh is tender and well tasted, and they are a favourite object of chase with the Moghuls and Tartars.

Procapra picticauda, the Goa or Ra-goat, the Tibet ravine-deer of Europeans, is met with on craggy mountain sides, and, like the goral and chamois, delights to sport among cliffs and precipices. It is described by Mr. Hodgson as an inhabitant of Tibet. It has brown hair with rufous

tips; the inside of the ears and limbs white, and tail black. It is perhaps *P. gutturosa* in its summer coat.—*Eng. Cyc.* p. 236; *Adams*.

PROCELLARIDÆ. The petrel family of birds, of the order Natatores and tribe Vagatores, *Blyth*, comprising the albatrosses (Diomedinæ), the petrels (Procellarinæ), and the diving petrels (Halodrominæ), including the genera *Diomedea*, *Procellaria*, *Prion*, *Pelicanoides*, *Puffinus*, and *Thalassidroma*.

Procellaria Capensis is the Pintado petrel, Cape pigeon, painted petrel.

Procellaria hesitata, capped petrel of Indian and Southern Oceans. A rare straggler in Britain, has been obtained in Lower Bengal.

Procellaria pelagica, the stormy petrel, seems to belong to every sea.—*Cal. Mus. Cat.*; *Adams*.

PRO CERIDÆ. Among the insects of this family, collected by Dr. Wallich, there were four or five species of true Carabus. Calosoma are found wherever the oak grows. *C. Indicum* inhabits Nepal. If caterpillars are necessary to keep in check the luxuriance of tropical vegetation, the Calosomata are equally necessary to keep within bounds these insects, which sometimes destroy, in northern climes, nearly the foliage of the year.—*Hope's M. L. J.*, July 1840, p. 117.

PROME, a town which gives its name to a district in the Pegu division of British Burma. It is situated on the left bank of the Irawadi, in lat. $18^{\circ} 43' N.$, long. $95^{\circ} 15' E.$, and is 113 miles N.W. from the town of Pegu. The area of the district is 2887 square miles, and population in 1872 about 274,872. It was taken by the British Indian army on the 1st October 1825, and again on the 9th September 1852. There is here a famed Buddhist pagoda, commonly called 'Shoay San Dau,' or the royal golden-hair pagoda.

PROMETHEUS, the fire-stealer in an old Greek legend, takes his name from the Sanskrit *Pramantha*, identical with the Greek *Manthano*, and in their common root, 'Manth,' lay the idea of seizing, robbing, etc. The cave to which the Macedonians attached the story of Prometheus was somewhere in the Paropamisian mountains.

PROON-BA-JAH. BURM. A tree of Akyab, and plentiful in Arakan. Used for making wooden bells, etc.—*Cal. Cat. Ex.*, 1862.

PROPHET, a term in use amongst the people of Europe to designate Mahomed, whom his followers call the Ras-ul-Allah, or messenger of the Lord, also Paighambar. Europeans sometimes call him the Arabian prophet; his followers never do so.

PROSERPINE. Kali is the Hindu Proserpine, or Calligenia, the Grecian handmaid of Hecate. The latter name seems of Hindu origin, 'born of time' (*Cali-janama*?), and Proserpine is from *Prasarpini*.—*As. Res.* v. p. 298.

PROSOPIS, a genus of plants belonging to the order Fabaceæ. *Prosopis algaroba*, like *Ava*, to produce chica, is chewed and put in a bowl, mixed with water, allowed to ferment, and drunk.

PROSOPIS DULCIS. *Kth.*

Acacia levigata, *Rozb.* | *Mimosa levigata*, *Rozb.*

A tree of N. Spain introduced into India from the Mauritius. The pulp of the pods is very sweet, and is eaten.—*Voigt*.

PROSOPIS SPICIGERA.

PRUNUS ACUMINATA.

PROSOPIS SPICIGERA. Linn.

P. aculeata, *As. Res.*
P. spicata, *Burm.*

Adenanthera aculeata,
Roxb.

Shami, Shuni, . . . BENG.
Shemu, Sumri, . . . BOMBAY.
Jhand, Khand, . . . HIND.
Soundar, . . . MAHR.
Aghzakair, Seb, . . . PANJ.

Se, . . . SALT RANGE.
Khan Kunda, . . . SIND.
Vanni, Parambay, TAM.
Priyadarsini, Jammi, TEL.
Jaunum, . . . "

This tree grows all over India and Sind. It is often stunted and gnarled, in the Panjab preserves it is abundant, and largely used for fuel in steamships and railways. Dr. Brandis relates that a root which was dug out penetrated 64 feet vertically. It attains even a large size in Sind, Coimbatore, and Mysore. Its timber weighs about 100 lbs. unseasoned, and 58 lbs. seasoned, and has a specific gravity of 1.152. It is dark red in colour, straight and close-grained, hard and durable, and superior to teak in strength, and is much used for building purposes and cart wheels, and occasionally for furniture, and makes excellent fuel. It is of very slow growth; it flowers in the hot weather; the mealy sweet substance in the pod is eaten by the natives, and a gum exudes from the tree. Dr. Wight found it sustain a weight of 592 lbs. Its pod is about an inch in circumference, and from 6 to 12 inches long, and when ripe it contains a quantity of a mealy substance which has a sweetish taste. The tree is revered in the Dassera rites. It is sometimes used for boat-building. — *Drs. Ainslie, Wight, Gibson, Stewart; Colonel Beddome.*

PROSTITUTES. The great bulk of the prostitutes of India are of Hindu origin. In 1853, Calcutta, with a population of 416,000, had 12,419 common women, of whom 10,000 were Hindus, several being daughters of Kulin Brahmans. In September 1867 there was reported to be upwards of 30,000 women in the town of Calcutta depending on prostitution, but this seems an unlikely number. The majority were said to be Hindus. — *Cal. Rev.*, August 1868. See *Dancing Girls; Deva-Dasa.*

PROTESTANT, a term applied to Christian sects founded by Luther and Calvin, who protested against doctrines enunciated by the popes of Rome. They number 531,345 in India. Protestant missions in the Tamil country were commenced in 1706, but for about a century the only labourers were Danes and Germans. Christian Protestant missions in Bengal may be regarded as dating from 1799, when the Serampur mission was founded. In 1862, there were 65 European missionaries labouring among the Bengal people, and 16,277 native Protestant Christians. In the Tamil country, there were 132 European missionaries, and 94,540 native Protestant Christians. The Bengali-speaking population of India may be roughly estimated at 26 millions, the Tamil at 12 millions.

PROTIUM CAUDATUM. W. and A.

Maray manga, . . . TAM. | Malay kluyv, . . . TAM.
Kilevay, . . . " | Vela patri, . . . TEL.

This middling-sized green-barked tree is common in most of the dry sub-alpine jungles on both sides of the Madras Presidency, and is found in Ceylon. It is very common as an avenue tree, but is bare of leaves for some months towards the end of the cold season and beginning of the

hot, the young leaves appearing with the flowers in March, the leaves and bark having a strong grateful fragrance. The tree grows most readily from large cuttings, which is the reason it is so often employed for avenue purposes; the wood is said to be worthless. — *Wight; Beddome, Fl. Sylv.* p. 125.

PROVINCE WELLESLEY, on the mainland of the Malayan Peninsula, opposite Penang, from which it is separated about 3 miles, runs north and south 25 miles, varying in breadth from 4 to 11 miles, contains an area of 15,000 acres.

PRUNELLA, *Alu Bokhara*, PERS., *Ustukhudus*, PUSHTU, have a reddish-yellow colour, and a sweet, grateful taste, with a slight and pleasant acidity. They are a variety of prunes, and are brought to Bombay from the Persian Gulf. — *Faulkner; Powell's Handbook*, i. p. 365.

PRUNES. *Alu Bokhara*, PERS. A species of dried plum; there are many varieties. They are generally of an oblong shape and sweet taste, and are prepared in France, Germany, Portugal, and other parts of Europe. Those procurable in Bombay are brought from the Persian Gulf. — *Eng. Cyc.*

PRUNUS, a genus of plants of the order *Amygdaleae*, all of the species being natives of the temperate parts of the northern hemisphere. The *Amygdaleae* comprise six genera, the East Indian species of which may be thus shown:—

Prunus acuminata, *Wallich.*
P. aloocha, *Royle*, plum of Irki.
P. amygdalus, *Buillon.*
P. Armeniaca, *Linn.*, the apricot, Panjab.
P. Bokhariensis, *Royle*, Bokhara plum.
P. cerasus, *Linn.*, the cherry.
P. coccinilla, *Ten.*, Calabria.
P. communis, *Huds.*
P. domestica, *Linn.*, common plum.
P. insititia, *Linn.*, the bullace.
P. Jacquemontii, *Hook.*
P. Japonica, *Thunb.*, China, Japan; *var. a.*, simple; *var. b.*, plena.
P. Jenkinsii, *Hook.*
P. macrophylla, *S. and Z.*, Japan.
P. mahaleb, *Linn.*
P. Martabanica, *Wall.*
P. nume, *S. and Z.*, Japan.
P. padus, *Linn.*, Japan, Hazara.
P. paniculata, *Thunb.*, Japan.
P. Persica, *Linn.*, Japan, Panjab.
P. prostrata, *Lab.*
P. puddum, *Roxb.*
P. punctata, *Hooker.*
P. rufa, *Wall.*
P. spinulosa, *S. and Z.*, Japan.
P. tomentosa, *Thunb.*, Japan.
Cerasus Caroliniana, *Michx.*, Florida.
C. cornuta, *Wall.*, Sirmore.
C. lauro-cerasus, *Lois*, Levant.
C. Nepalensis, *Scr.*, Nepal, Katmaon.
C. pseudo-cerasus, *Lindl.*, China, Japan.
Armeniaca dasycarpa, *Pers.*, ?
A. vulgaris, *Lam.*, apricot.
Amygdalus cordifolia, *Roxb.*, China.
A. Persica, *Linn.*, peach tree.

Prunus Armeniaca, *P. cerasus*, *P. Bokhariensis*, *P. triflora*, *Roxb.*, grow abundantly in North-Western India. — *Voigt; Powell; Royle's Ill. Him. Bot.* p. 205.

PRUNUS ACUMINATA. *Wall.* A tree of the E. Himalaya, Khasiya Hills, and Darjiling, up to 6000 feet, with a thin dark bark and reddish-brown wood.

PRUNUS ARMENIACA. *L.* Apricot.*Armeniaca vulgaris, Lam.*

Binkook, . . .	ARAB.	Zard-alu, Khoobani, HIND.
Tuifa Armina, . . .	"	Kashmiri kista, . . .
Shari, . . .	BEAS.	Hari, Harian, . . . JHEUM.
Baboor-kohani, BOKHARA.		Cherkush, . . . KANGRA.
Cheroli, . . .	CHENAB.	Mishmish, . . . PERS.
Tser-kuji, Chu-li, . . .	CHIN.	Chir, Chiran, . . . RAVI.
Chulu, . . .	HIMALAYAS.	Jaldaru, . . . SUTLEJ.
Chinaru, . . .	"	Mandata, TRANS-INDUS.

The apricot tree grows well on the first range of the Himalaya, bearing abundance of fruit in the months of May and June. It is propagated in the same way as the peach. In India the tree has been naturalized, and grows to a large size in gardens of the Dekhan and Mysore. It blossoms at the same season as the peach, from January to March. Dr. Stewart had seen the apricot wild in many places from 4000 to 6000 feet in the Panjab Himalaya. It is commonly cultivated all over, up to perhaps 15,000 feet, in some places in the dry climates of the Upper Sutlej and the Upper Chenab, and even to 11,500 or 12,000 feet in parts of Tibet. A great deal of the fruit, especially at the higher elevations, is very inferior, and in Tibet it is generally small. But very fair fruit is grown in many parts, and, in some of the Kanawar villages especially, the trees constitute a chief form of the wealth of the inhabitants, and yellow heaps of it may be seen drying in thousands on the roof of almost every house. A considerable quantity (100 maunds) of dried apricots are annually imported via Peshawar into the Panjab from Afghanistan, where the tree is largely grown. A gum similar to gum-arabic exudes from wounds in the bark of the tree. The wood is used occasionally for making the Tibetan drinking cups.

J. D. Cunningham; Drs. Royle, Riddell, Stewart, Royle, Birdwood, Moorcroft; Darwin, Variation of Animals.

PRUNUS BOKHARIENSIS. *Royle.*

Bokhara plum, . . .	ENG.	Kokamalis, GRÆCO-PERS.
BOHAR-ALU, . . .	GR.	Alu Bokhara, HIND., PERS.

Cultivated at Ghazni.

PRUNUS CERASUS, Cherry tree.

Jerassaya, Kerasaya, ARAB.	Sakura, . . .	JAPAN.
Padam, . . .	HIND.	Alu Lalu, . . .

The cherry tree abounds wild in the hills north of Dehra Doon, producing a small common black fruit fit only for preserves, etc.—*Royle; Riddell.*

PRUNUS DOMESTICA. *Lin.* Plum.

Barkook, Bargooq, ARAB.	Aluchah (small), . . .	HIND.
Fars Epass, Idrek, Shahloo, . . .	Shah Alu (yellow), . . .	"
Aru, Alu, . . .	HIND.	Olchi, Er, Or, . . .

Appears to be common, wild and cultivated, in Kashmir, and is cultivated in Afghanistan, etc. Moorcroft mentions some from Yarkand as infinitely preferable to the best French plums. It is also cultivated in the Panjab plains, yielding a waxy yellowish fruit, also said to be found wild in the Caucasus. In Kashmir the wood is used for making the skeletons of the papier-mache boxes. The wood is not generally sound, but handsome, resembling pear or cherry. It is used in turning. Not available in quantity.—*Darwin; J. L. Stewart; Powell.*

PRUNUS INSITITA, the bullace, is found wild in the Caucasus and N.W. India.—*Darwin.*

PRUNUS PADUS. *Lin.* Bird cherry.*Cerasus cornuta, Roeb.*

Pacha, Paja, . . .	HIND.	Paras; Bart, . . .	KAGHAN.
Kalukat, . . .	"	Krun, . . .	"

A plant of Kaghan, also of Simla, at elevations of 7000 to 10,000 feet; and Dr. Stewart had seen the people in the Murree Hills eating the black berries of this tree. He describes it as a fine tree, with handsome bunches of white flowers in April, growing in many parts of the Panjab Himalaya from 4000 to 10,500 feet, up to the Indus. The wood is not much valued, but is used for ploughs, railings, etc., and for spoons. The fruit is eaten by the natives, but has a mawkish astringent taste, not peculiarly attractive to Europeans. The kernel yields a poisonous volatile oil, similar to oil of almonds.—*Stewart; Powell.*

PRUNUS PUDDUM. *Roeb.*

<i>P. sylvatica, Roeb.</i>	<i>Cerasus puddum, Wall.</i>
Pajja puddam, . . . BEAS.	Amalgueh, . . . JHEUM.
Chamari, . . . JHEUM.	

A small tree of the Dehra Doon, Simore, and the eastern and Panjab Himalaya, at from 3000 to 5000 feet, up to near the Indus. The fruit is eaten by the natives, though it is always somewhat bitter. The wood is coarse-grained, light, soft, apt to split and to be attacked by insects, but is used in building, and occasionally for implements.—*Dr. J. L. Stewart.*

PRUSSIAN BLUE.

Yang tien, . . .	CHIN.	Berlinerblau, . . .	GER.
Sesqui ferro-cyanide of iron, . . .	ENG.	Azurro Prussiano, . . .	HIND.
Percyanide of iron, . . .	"	Ferri-ferro-cyanas, . . .	LAT.
Ferro prussiate, . . .	"	sesqui-ferro-cyanidum, . . .	"
Blau de Prusse, . . .	FR.	Lasar Bektinskaja, . . .	RUS.
Cyaneisen, . . .	GER.	Azul de Prussia, . . .	SP.

A pigment or dye, composed of cyanogen and iron, and procured by a chemical process from carbonate of potass, bullock's blood, green vitriol, and alum. It is prepared of different degrees of purity, and additions are made to it according to the purposes for which it is required. When pure, it is of a rich and intense blue, with a copper tint on the surface, inodorous, tasteless, insoluble in water, in alcohol, and diluted acids, but is acted upon and dissolved by strong acids. Prussian blue is now extensively made in China, the art of manufacturing it having been carried from the west to the east by a Chinese sailor.—*Waterston; McCulloch.*

PRUSSIC ACID, or hydrocyanic acid, is obtained by the action of muriatic acid on bi-cyanuret of mercury. It is limpid, very volatile, and of a strong pungent odour, resembling that of bitter almonds. Its taste is acrid, and it is virulently poisonous. In medicine it is used as a sedative.—*Waterston; Fankner.*

PSAMMA ARENARIA. *Roem. and Sch.*

<i>P. littoralis, Beauv.</i>	<i>Calamagrostis arenaria.</i>
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This is the bent grass.

PSEUDOCARCINUS, a genus of crustacea.

The following are species of the E. Indies:—

Pseudocarcinus Rumphii, Edw., Indian seas.

P. belangerii, Edw., Indian seas.

P. gigas, Edw., New Holland.

PSEUDOCOCCUS ADONIDUM, white bug or mealy bug of Ceylon. See Insects.

PSEUDOIS NAHOOR, the Nahoor, Nervate, or Sna, is a native of Nepal.

PSIDIUM CATTLEIANUM. *Sabine.* Chinese guava, purple guava.

PSIDIUM POMIFERUM. *L.* Red guava.

Lal payara, . . .	BENG.	Jambu, . . .	MALAY.
Ma-la-ka, . . .	BURM.	Ratu pera, . . .	SINGH.
Jam, . . .	DUKH.	Koia maram, . . .	TAM.
Lal-safri jam, . . .	HIND.	Jama chettu, . . .	TEL.

PSIDIUM PYRIFERUM.

The guava tree of the W. Indies, Mexico, and America is cultivated throughout the E. Indies. It grows to a height of 20 or 30 feet, with leaves of pale green, and beautiful large white blossoms. The fruit is about the size of a pear, and a little yellowish when ripe, full of hard seeds the size of buckshot. The fruit is globose, yellow, and somewhat astringent, with an agreeable odour; the root and young shoots are astringent, and are esteemed strengthening to the stomach. The wood is but little used, though esteemed for engraving.—*Eng. Cyc.*; *Malcom's Tr. i.* p. 108.

PSIDIUM PYRIFERUM. L. White guava.

Guava pyriformis, *Gærtn.*

Payara, . . .	BENG.	Amrood, . . .	HIND.
Ma-la-ka, . . .	BURM.	Supari-jam, . . .	"
Sebamara, . . .	CAN.	Pela, . . .	MALEAL.
Fan-nien, . . .	CHIN.	Suda-pera, . . .	SINGH.
Fan-shih-liu, . . .	"	Koia maram, . . .	TAM.
Jam, . . .	DUKH.	Jama chettu, . . .	TEL.

The pear-shaped or white-fruited guava tree, in all Southern Asia is seen everywhere in gardens, and probably found its way to India from S. America through the Portuguese. Its fruit is esteemed as a dessert fruit, but the scent when too ripe is unpleasantly powerful; it makes a most excellent jelly, and also is prepared in a similar manner to damson cheese. The fruit is sometimes as large as a common baking pear, and may weigh half a pound. They have been brought to great perfection in some gardens, and the fruit of a large size divested almost of seed. This sort generally has a very rough knotty coat, and is more spongy and less firm than the other varieties. A plant continually grown from layers in time ceases to produce seed; perhaps this variety has been so procured. The tree is easily increased by seed, and only requires a good soil to thrive in. The trees should be pruned once a year, otherwise the branches become very straggling. Good gun-stocks are made from the old wood, which is small but very hard, and is used for wood engraving, and commonly for pegs, mallets, handles of tools, etc.—*Drs. Mason, Ainslie, Riddell, Cleghorn*; *Rohde's MSS.*; *M. E. J. R.*

PSITTACIDÆ, the parrot family of birds, of the order Scansores. See Birds; Parrots.

PSOPHOCARPUS TETRAGONOLOBUS. D.C.

Dolichos tetragonolobus, *Linn.*

Char-kona shin, . . .	BENG.	Winged pea, . . .	ENG.
Chandaree, . . .	BOMBAY.	Goa beans, . . .	"
Charpattee, . . .	"	Chevaux de frise, . . .	FR.
Pai mycet, . . .	BURM.	Pois carré, . . .	"
Pai hsoung wa, . . .	"	Dara-dambala, . . .	SINGH.

A twining annual, the pods or tuberous roots of which are generally eaten in India; commonly cultivated, and young pods used as French beans; easily known by its four-fringed membranous edges; much used by Europeans. The plant is indigenous in the Mauritius. In Tenasserim there is a variety of the Goa bean which produces esculent roots that are eaten like potatoes, and are a very tolerable vegetable.—*Eng. Cyc.*; *Jaffrey*; *Mason*.

PSORALEA CORYLIFOLIA. *Linnaeus.*

Trifolium uniflorum, *Forsk.*

Hakuch, . . .	BENG.	Karpugum, . . .	TAM.
Po-ku-chi, . . .	CHIN.	Bapunga, Bavanji, . . .	TEL.
Baw-chan, . . .	DUKH.	Kalu gachia, . . .	"
Karkol, . . .	MALEAL.	Kala ginja, . . .	TIB.
Bab-chi, . . .	PUSHTU.	Korjastham, . . .	"

This herbaceous plant grows in Persia, Bengal,

PTEROCARPUS ACERIFOLIUM.

and the Peninsula of India. Yields the banchee seeds, used medicinally for leucoderma and scaly skin eruptions.

PSYCHOTRIA, a genus of plants of the order Cinchonaceæ, of which nine species are known to grow in the East Indies. A handsome shrub of this genus, Sgau, BURM., grows in Tenasserim, whose small white flowers throw out a delightful fragrance.—*Mason*; *Voigt*, p. 393.

PTERIDOPHYLLUM DECIPIENS. *Thur.*

Rhus decipiens, *W. and A.* | Pehimbia-gass, . . . SINGH.

Grows in the central province of Ceylon up to an elevation of 3000 feet. It flowers in January and fruits in March. It is a very ornamental tree, and in Ceylon the wood is used for building purposes.—*Thur. Zeyl.* p. 59.

PTERIS, a genus of ferns of the order Polypodiaceæ. The following are East Indian species:—

Pt. amplexitens, <i>Wall.</i>	Bengal, Burma.
Pt. angustifolia, <i>Siez.</i>	Paras, Sunderbuns.
Pt. dimidiata, <i>Wall.</i>	Sylhet.
Pt. esculenta, <i>Forst.</i>	Australia.
Pt. graminifolia, <i>Rorb.</i>	Paras, Sylhet.
Pt. vittata, <i>Linn.</i>	Sunderbuns.

The rhizome of *Pteris esculenta* is used as food in Australia, like that of *Marattia alata* in the Sandwich Islands. *Pt. amplexicaulis* is common at Tavoy, with pinnate fronds, whose leaflets have two lobes at the base which clasp their stipe. *Pt. graminifolia*, grass fern. The trunks of forest trees in Tenasserim are often clothed with the green drapery of the grass fern, which grows upon them precisely like bunches of long grass.—*Voigt*; *Mason*.

PTEROCARPUS, a genus of plants of the order Fabaceæ, generally tall trees, furnishing useful timber and other products. The following species are said to occur in the E. and W. Indies:—

Pt. draco, <i>Linn.</i>	Guadaloupe.
Pt. erinaceus, <i>Poir.</i>	W. Africa.
Pt. Indicus, <i>Willd.</i>	Moluccas, China.
Pt. macrocarpus, <i>Kurz.</i>	Burma.
Pt. marsupium, <i>Rorb.</i>	Konkan, Assam.
Pt. Santalinus, <i>Linn.</i>	Coromandel.
Pt. Wallichii, <i>W. and A.</i>	"

One species of *Pterocarpus* is known in the Tamil countries as the Ausena maram; another, the Jumbagum maram, common about Nelambore and in Vynad, is a large tree, with wood used for building and fence gardens, said to be durable; a third, the Karu vagu, is a very common tree on the Western Ghats,—wood strong, durable, and much used for building; a fourth, the Wulla honnay of the Canarese, grows in the Mysore forests, and is used for furniture and house-building. A Burmese species, Padouk of Tavoy, is a large tree used for furniture, etc.; another, called Beejah in Hindustan, is a tree of Jubbulpur, grows to a large size, is found in all parts, but not very abundant, has an excellent wood, and easily worked.—*M'Ivor*; *Captain Puckle*; *Gibson's Bombay Forest Report of 1857-60*, p. 12; *Wallich*; *Cal. Cat. Ex.*, 1862.

PTEROCARPUS ACERIFOLIUM. *M'Clell.* Najee, BURM. This grows along with teak in all the Pegu forests; its timber is extremely valuable, and is as strong as either teak or oak. Its durability for purposes of ship-building has never been tested, because it has never been desiccated or killed like the teak. It attains a girth of 10 or 12 feet, and rises to a lofty height. It has a dark-brown wood.—*M'Clelland*.

PTEROCARPUS DRACO.

PTEROCARPUS DRACO. Linn.

Pt. officinalis, Jacq.	Pt. hemiptera, Gert.
Dum-ul-akwain, AR., HIN.	Hira da-khun, . . . PERS.
Jyda-roomee, . . .	Barg-i-bart, . . .
Dragon's blood? . . . ENG.	Kandamoorgarittum, TAM.
Khun siawashan, PERS.	Katja murgam nitru, TEL.

This tree was introduced into India from the West Indies in 1812, but seems to have died out. It is a native of American islands, and especially Guadeloupe. The bark, wood, and leaves are remarkably astringent. The dragon's blood in mass, of commerce, according to Jacquin, is the produce of this tree, but another sort, and most likely that sold in Indian bazars, is produced by the *Calamus draco* of the Straits, in the form of a red hard resin, in large, somewhat cylindrical lumps; it contains benzoic acid and tannic.—Voigt; O'Sh. p. 997; Pouvell.

PTEROCARPUS ERINACEUS, Poirét, is a tree of W. Africa, which grows to 40 or 50 feet in height. When the branches are wounded, a clear bright gum exudes from them, which is one source of the gum-kino of commerce, and is mentioned as such by Park. It is a very powerful remedy in obstinate chronic diarrhoea and dysenteries, and in all diseases arising from laxity of tissue. Externally it is applied as a styptic to check hæmorrhages from wounds and ulcers, and to diminish discharges. The gums obtained from the *Pterocarpus erinaceus* of Gambia and Senegal, and from the *Pterocarpus marsupium* of India, are the true gum-kinos of commerce; the gum from the *Butea frondosa* is the *Butea* gum-kino of commerce; Botany Bay kino is obtained from *Eucalyptus resinifera*; a kino-like gum is obtained from *Syzygium jambolanum*.—Eng. Cyc.; Royle.

PTEROCARPUS FLAVUS. Smith.

P'-i-muh, CHIN.	Yellow sandal tree, ENG.
Hwang-peh,	"

A large leguminous tree of China, used for dyeing yellow. Its very bitter bark is used as a tonic diuretic and anti-rheumatic.—Smith.

PTEROCARPUS INDICUS. Willd.

Pt. dalbergioides, Roxb.	Pt. flavus, Lour.
W. and A.	Pt. obtusatus, Mig. Fl.
Pt. Wallichii, W. and A.	Ned. Ind. i. p. 136.
Padouk, BURM.	Hwang-peh, CHIN.
Cha-lan-ga-da,	Andaman red wood, ENG.

This very handsome lofty tree of Burma and the Andamans is said to be indigenous to S. India, but Colonel Beddome had never met with it wild, though grown in gardens there, and is well deserving of extended cultivation; it is common in Burma and in the Andamans; it is also found in Malacca, Penang, Sumatra, Java, Philippine Islands, and South China. It yields a valuable flame red-coloured beautiful timber, which is much used in the gun-carriage manufactories of Madras and Bengal. The wood is prized above all others in Burma for cart wheels; the trees are felled green, and split up into short planks 3½ feet long by 2 feet wide, and 9 inches thick; three of these pieces make one wheel, and a pair are sold in the forests from 12 to 25 rupees. The wood is used for furniture, and by the Burmese for musical instruments; it weighs about 60 lbs. the cubic foot.—Beddome, Fl. Sylv. p. 23.

PTEROCARPUS MARSUPIUM. Roxb.

Bi-ja-sal, BENG.	Vijaya, NEPAL.
Hone whonay, . . . COORG.	Bengha, S. CAN.
Rakta whonay, . . .	Zammalu, SINGH.
Pia sal, Pit sal, . . .	Vengay, TAM.
Bibla, HIND., MAHR.	Yegi, TEL.

PTEROCARPUS SANTALINUS.

This is a large and a very beautiful tree, especially when in flower in the beginning of the rains; its seed ripens about the close of the year. It is widely diffused, and yields one of the most abundant and useful timbers of S. India, and also the valuable gum-kino of Malabar. Its size and manner of growth differ very much under different circumstances; it is often very poor and scraggy, but attains a fine size in the western forests of the Peninsula, and in favourable ravines and sub-alpine jungles elsewhere; it is seldom found of any size above 4000 feet elevation. It is common all round the foot of the Neilgherry Ghats, and along the roads through the Wynad. It is there notched in a V-shaped form for the extraction of kino, which meets with a ready market on the coast, and is exported in wooden boxes to Bombay. It grows luxuriantly on the Eastern Ghats, on the hills between Vellore and Salem, and on the Malabar and Canara Ghats, where large quantities are collected of the resinous kino. The tree abounds near Tellicherry, and along the whole Malabar coast. It is not generally common in the Bombay forests, but is most seen in the northern inland ones, and also in those of the extreme south, as in the Bedee taluk. Buchanan Hamilton mentions it under the name of Vijaya as occurring in Nepal and also to the eastward of Bengal. It has been observed in the Konkans (Graham), Rajpepla jungles (Dr. Lush), and Assam (Voigt). The timber is dark-coloured and strong, and much prized for building purposes, and in some parts of Madras Presidency fetches as high a price as teak. On the Godavery, the native dhol is often made of it. It yields from incisions a large quantity of blood-red juice, which, on being simply exposed to the sun, hardens and then quickly cracks into little angular masses and crumbling fragments, which constitute, without further preparation, the kino of the shops. The product can be obtained with facility by simply incising the bark, and requires no outlay save that of collecting. The timber is very little inferior to teak; it seems less liable to split after long exposure, and is equally strong, but the wood is heavier. Vessels built in the Ganjam districts are planked with it; and the door panels and venetians of the neglected houses at Ganjam are formed of this wood, and have stood better than teak similarly situated. It is more expensive than teak to work, and when sawn green the outer planks bend considerably. This is one among the unlucky woods of the Hindus, though the prejudices against it have in part given way to profit. For general utility, it is superior to any other mahajante wood, a commercial term among the people of the Northern Circars, including all wood used for building except teak.—Roxburgh, iii. p. 234; Coromandel Plants, ii. t. 116; Drs. Wright, Gibson, Royle, Ainslie, O'Shaughnessy, Cleghorn, Voigt; Captains Sankey, Puckle, Beddome; Messrs. Latham, M'Ivor, Rohde's MSS.; Madras Conservator's Report of 1858; M. E. J. R.; Eng. Cyc.

PTEROCARPUS SANTALINUS. L.

Sundul ahmar, ARAB.	Red sanders wood, ENG.
Rackto-chandan, . . . BENG.	Red sandal-wood, . . .
Na-sa-phiu, BURM.	Santale rouge, . . . FR.
Honnay, CAN.	Sandal-holz, GER.
Chih-tan, Tase-tan, CHIN.	Rutunji, GUJ.
Sandel hout, ? DAN.	Lal-chandan, HIND.
Lal-chandana, DUKH.	Chandana,
Sanders wood, ENG.	Sandalo rosso, IT.

Uruttah chandanam,	Rakta chandana, SANSK.
MALEAL.	Sigapu shandanum. TAM.
Raktchandan, MAR., SING.	Ranjana, TEL.
Sandal surkh, . . . PERS.	Ku-chandanam, . . .
Buckum, "	Rakta-gandham, . . .

Colonel Beddome says this red sanders tree of commerce much resembles *Pterocarpus marsupium* in flower and fruit, but differs by always having 3 instead of 5 to 7 leaflets. It was thus described correctly by Dr. Roxburgh, but subsequent authorities have described it erroneously as having 5 to 7 leaflets. It is abundant on the low hills about the Cuddapah and North Arcot forests and the southern part of the Kurnool district, and Colonel Beddome has seen a few trees in the Godavery forests, but he never met with it elsewhere in the Madras Presidency, and it is not, he believes, found anywhere else in India. The wood is of a fine grain and bright garnet colour, which deepens on exposure to the air. It is beautifully streaked, very hard and heavy, and takes a fine polish; it is much used and highly prized by the natives for building purposes, and for turnery in Madras and the districts in which it grows; it is also largely exported from Madras as a dye-wood, and used as ballast; it is not often found over 3½ or 4 feet in girth and about 20 to 28 feet in height; the largest trees reach 4½ feet in girth, but are then much heart-shaken or hollow. The logs are often notched at both ends, or cut with a hole as for a rope, and are much worn externally from being dragged along the ground; other wood, as also indeed ivory tusks, are sometimes perforated for the like purpose. A bandy-load of selected logs will sell for as much as Rs. 200, i.e. twenty logs at 10 rupees each; the roots and stumps are used for dyeing purposes, and sell at 6 to 9 rupees the 1000 lbs. The cattle during the dry season are much fed upon the leaves of this tree, and young saplings are often bodily cut down by thousands by the cowherds. In the four years 1852-53 to 1855-56, there was exported from Madras 179,815 cwt., value Rs. 2,20,983, the destination chiefly being the United Kingdom, Indian French ports, Pegu, and Bengal. It is principally shipped to England from Calcutta in billets from 2 to 10 inches diameter, generally without sap, and sometimes in roots and split pieces. This will explain much of the shipments from Madras to Calcutta. Its timber is chiefly used by dyers and colour manufacturers, also to colour medicine preparations. Its colouring matter is called santalin, and forms a beautiful colour, but precipitates with many metallic solutions. It is employed to dye lasting reddish-brown colours on wool; it yields its colouring matter to ether and alcohol, but not to water. With different mordants it yields various shades of red, but these are said not to be permanent. Indian practitioners sometimes recommend it in powder in conjunction with certain herbs, and mixed with gingelly oil, as an external application and purifier of the skin after bathing. Its red colouring matter also acts as a diaphoretic, like gentian. It is applied to the forehead in headache, and also as a cosmetic.—*Ains.*; *Eng. Cyc.*; *Tredgold*; *Mr. Rohde's MSS.*; *Colonel Beddome*; *Drs. Wight, Cleghorn in M.E.J.R. of 1855*, and *Conservator's Report*, pp. 37, 38; *Mr. Simmonds*; *Balfour's Commercial Products of Madras Presidency*; *Drury's Useful Plants*; *Voigt*; *Gen. Med. Top.*; *Powell*.

PTEROCLES, a genus of birds of the family Pteroclidæ, the sand grouse or rock grouse of Europeans in India.

- Pt. arenarius*, *Pallas*, large sand grouse, Panjab, N. W. Provinces, and Sind.
Pt. fasciatus, *Scopoli*, painted sand grouse, over most of India except Bengal and Malabar.
Pt. alchata, *Lin.*, large pin-tailed sand grouse, S. Europe, N. Africa, Central Asia, Panjab, Sind.
Pt. exustus, *Temm.*, common sand grouse, Central and S. India.
Pt. Senegallus, *Lin.*, S. Africa, Arabia, Sind.
Pt. coronatus, Africa, W. Asia.

The large black breast (*Pterocles arenarius*) is at once distinguished by its size and even tail from the pin-tailed grouse (*P. exustus*), which is by far the most common; both are met with in flocks in fields and waste places. Their flight is strong; and although their flesh is tough and unsavoury, they are much sought after by European sportsmen. The large pin-tail (*Pt. alchata*) is said to be plentiful in Afghanistan and westward.—*Adams*; *Jerdon*. See Birds.

PTEROMYS. *Car.* A genus of the family Sciuridæ, and commonly known as the flying squirrels, because of the skin of their flanks being extended between the fore and hind feet, forming, when expanded, a wide parachute. The species occur in the south east of Asia and in the islands of the Archipelago. *Pt. cinereus*, *Blyth*, is of Burma; *Pt. elegans*, *S. Muller*, is of Java.

Pteromys inornatus, *Is. Geoffroy* (*Pt. albiventer* *Gray*), is the white-bellied flying squirrel, the rusi-gugar of Kashmir. Above it is grizzled reddish-brown; length of head and body, 14 inches; found throughout the N.W. Himalaya from Kashmir to Kamaon, Simla, Landour, from 6000 to 10,000 feet.

Pteromys magnificus, *Hodgson*.
P. chrysotryx, *Hodg.* | *Sciuropterus nobilis*, *Gray*.
 Red-bellied flying squirrel | *Biyon*, LEPCHA.

Above dark chestnut or ochreous chestnut mixed with black, with lower part of a lighter hue, and the tail tipped with black. Its fur is very soft; a female measured 16½ inches from head to insertion of tail; the latter was 20 inches in length. This flying squirrel is nocturnal in habits, secreting itself in hollows of decayed trees, and feeds on the tender shoots of the pine.

Pteromys nitidus, *Geoffroy*, Peninsula of Malacca.

Pteromys petaurista, *Pallas*, *Blyth*.
Pt. Philippensis, *Ethol.* | *Pt. oral*, *Tickell*.
 Brown flying squirrel, *Eng.* | *Pakya*, MAHR.
Oral, KOL. | *Para-chalen*, MALAKAL.

Upper parts dusky maroon, black grizzled with white; body 20 inches long. Inhabits Ceylon, north to Central India. It lives on roots. It is the brown flying squirrel of Ceylon and the Peninsula of India. The length of the male is 20 inches and the tail 21 = 41 inches; that of the female 19 and the tail 20 = 39 inches. The male is distinguished by an irregular patch of rufous on the sides of the neck, which in the female is a sort of pale fawn. It is very gentle, timid, and may be tamed; but from its delicacy is difficult to preserve. Lives in the holes of trees in the thickest part of the forest.

Dr. Horsfield, in his Zoological Researches in Java, describes two flying squirrels (*Pteromys genibarbis* and *Pt. lepidus*), both nocturnal in their habits, nearly approaching to *Sciurus sagitta*. He

describes the first as living on fruits; the second as found in the closest Javanese forests, where the height of the trees and the luxuriance of the foliage effectually conceal it. He enumerates 16 species of Sciuri, 4 of which were first described by himself. These do not include the flying squirrels. —*F. Cuvier; Gray; Tennent's Ceylon*, p. 42; *Adams; Jerdon's Mammals of India*.

PTEROPODA, a class of the mollusca.

PTEROPODIDÆ, a family of frugivorous bats of the sub-order Cheiroptera. Drs. Peters and Gray enumerate 50 of the flying Pteropus, viz. 1 Indian continent and Burma, 25 Archipelago, 4 China, Japan, and Loo Choo Islands, 9 Polynesia, 5 Australia, and 6 Africa. Dr. Dobson greatly reduces the number. To drink, which it does by lapping, the Pteropus suspends itself, head downwards, from a branch above the water. Insects, caterpillars, birds' eggs, and young birds are devoured by them; and the Singhalese say that the flying fox will even attack a tree-snake. It is killed by the natives for the sake of its flesh, which Sir J. E. Tennent was told resembles that of the hare. It is strongly attracted to the cocoanut trees during the period when toddy is drawn for distillation, and exhibits, it is said, at such times, symptoms resembling intoxication. Neither the flying fox, nor any other bat in Ceylon, is ever known to hibernate. In Western India the Portuguese eat the flying fox, and pronounce it delicate and far from disagreeable in flavour. The Pteropus Edwardsii take up their abode on a banyan or other tree. Each bat is suspended by the hind feet. The Mahrattas call this bat the warbaggol. The species is very plentiful, and numbers are usually to be seen in the still evening at high elevations, flying with an easy floating motion, now and then varied by the regular flap of their large wings as they steer their course towards the fruit-groves. Dr. Adams measured one from tip to tip about 5 feet. Figs, mangoes, etc., constitute their favourite food. Pteropus Edwardsii and Pt. conspicillatus are found in Australia and Tasmania.

Pteropus Dyaksumerii, *Is. Geoff.*, is of the continent of India?

Pteropus edulis is of Java and Malacca.

Pteropus Edwardsii, *Jerdon*.

Pt. medius, <i>Temm.</i>	Pt. Assamensis, <i>M'Clell.</i>
Pt. leucocephalus, <i>Hodg.</i>	<i>Ell., Blyth.</i>
Badul, BENG.	Warbaggol, . . . MAHR.
Togul bawali, . . . CAN.	Kalong, MALAY.
Rousette, ENG.	Sikat yelli, . . . TEL.
Gadal, Barbagal, . . HIND.	Siku rayi, "

Found in Ceylon, India, and Burma. It is eaten in Ceylon. It is the flying fox or large fox bat. Its flesh is esteemed good eating. Its tongue is covered with large papillæ, pointing backwards, and each one terminating in a brush or collection of bristly points. Length of the male, 12 to 13 inches, weight 29 oz.; of a female, 20 oz. Expanse of wings upwards of 4 feet. When disturbed during the day, they fly slowly round and round, with a low screaming noise, and soon settle again; hovering for a moment over a bough, they catch suddenly with the claw on the angle of the wing, and, allowing the body to drop, they swing with a single hold. In shade and colour, they are of a yellowish-brown above, and yellowish-white below.

Pteropus Kernandrenii, a fruit-bat of Tongataboo, Fiji, Samoa, and Caroline Islands. The Indian fruit-bat is Pteropus medius; the Australian fruit-bat is *P. poliocephalus*; the collared fruit-bat is *Cynonycteris collaris*.

Pteropus Leachenaultii, *Jerdon*, Pt. seminudus, *Kelaart*, is the fulvous fox-bat of Madras, Carnatic, and Trichinopoly.

Pteropus Nicobaricus, *Fitzinger, Zeleb.*, Pt. melanotus, *Blyth*, is of the Andaman and Nicobar Islands and Java?

Cynopterus marginatus, *Dobson*.

Pt. marginatus, <i>Geoff.</i>	Pt. Cyn. affinis, <i>Gray.</i>
Pt. pyrovorus, <i>Hodgson.</i>	Eleutherura marginata, <i>G.</i>

Throughout all India and Ceylon.

Cynopterus marginatus, var. Andamanensis, *Andamans*.

Cynopterus Sherzeri, *Dobson*.

Pachysoma Sherzeri, *Fitz.* | Cyn. marginatus, *Zeleb.*

Carnicobar.

Cynopterus brachysoma, *Dobson*.

Cynonycteris amplexicaudata, *Dobson*.

Pt. Leachenaultii, *Desm., B.* | Pt. seminudus, *Kelaart*.

Pt. amplexicaudatus, *Tem.*

Persian Gulf through the E. Archipelago.

Cynonycteris minor, *Dobson*, Java.

Eonycteris spelæa, *Dobson*, is *Macroglossus spelæus*, *Dobson*.

Macroglossus minimus, *Dobson, Temm.*

Pt. minimus, *Geoff.* | Pt. rostratus, *Horsf.*

India, Darjiling, through Burma to E. Archipelago. — *Tennent's Ceylon*, p. 18; *Adams' Naturalist in India; Jerdon's Mammals of India*.

PTEROSPERMUM, a small genus of plants of the order Sterculiaceæ (from the Greek word πτερον, signifying a wing, and σπερμα, a seed), found in the southern parts of India and the Archipelago. All the species form handsome trees, and abound in mucilage.

Pt. acerifolium, *Willde.*, Peninsula of India, Assam.

Pt. aceroides, *Wall.*, Martaban.

Pt. cinnamomum, *Kurz*, Burma.

Pt. diversifolium, *Bl.*, S. Indian.

Pt. glabrescens, *W. and A.*, S. India.

Pt. Heyneanum, *Wall.*, Ginja, Courtallum.

Pt. Javanicum, *Jungh.*, Burma.

Pt. lanceifolium, *Buch.*, Assam.

Pt. obtusifolium, *Wight*, Courtallum.

Pt. rubiginosum, *Heyne*, Courtallum.

Pt. reticulatum, *W. and A.*, Peninsula of India.

Pt. semi-sagittatum, *Ham.*, Burma.

Pt. suberifolium, *Lave*, Peninsula of India, Ceylon.

PTEROSPERMUM ACERIFOLIUM. *Willde.*

Kanak champa, . . . BENG. | Toung-phet woon, *Burm.*

Nagee, BURM.

A large and useful timber tree of the Peninsula of India and Assam, and growing along with teak in the Pegu forests, though scarce. It affords good shade. The timber is extremely valuable, and is as strong as teak or oak, but its durability has never been fairly tested, as it has never been desiccated like teak. It attains a girth of 10 or 12 feet, and rises to a lofty height. It has a dark-brown wood. — *M'Clelland; Eng. Cyc.; Voigt; Gamble*.

PTEROSPERMUM ACEROIDES. *Wall.*

Tha-ma-jam-wai-zoke, . . . BURM.

A timber tree of Martaban, and growing in the Pegu forests similarly to *Pt. acerifolium*, but plentifully; timber of the same qualities as *Pt. acerifolium*. — *Voigt; Wallich; M'Clelland*.

PTEROSPERMUM INDICUM. —?

Kyaboka wood tree, Eng. | Lingoa wood tree, . Eng.
Amboyna wood tree, „ | Seriolout, . . MALAT.

The kyaboka of commerce is said by Prof. Reinwardt, of Leyden, to be the burr of the *Pterospermum Indicum*, but by others that of *Pterocarpus draco*, and to be brought from the Moluccas, the islands of Borneo, Amboyna, etc. The wood is of the same colour as the burr, or rather lighter, and in grain resembles plain mahogany. Colonel Lloyd is quoted as saying that the root of the coconut tree is so similar, when dry and seasoned, to the bird's-eye part of the wood, termed kyaboka, that he could perceive no difference; the cocoa has a tortuous and silky fracture, almost like indurated asbestos. The general belief is that a tree called *Pt. Indicum* throws out burrs or excrescences, and that which receives the name of Amboyna wood or lingoa wood, seems to be the timber of the bole of the tree, sometimes along with that of the burr. The lingoa or Amboyna wood is abundant at Ceram, New Guinea, and throughout the Molucca seas. It is very durable, and takes a high polish. At the Exhibition of 1851, there was a circular slab of this wood, from Ceram, 6 feet 7 inches in diameter. But such large circular slabs are only obtained by taking advantage of the spurs which project from the base of the trunk. They are occasionally met with so large as 9 feet, but the usual size is from 4 to 6 feet. Amboyna or lingoa wood was imported in considerable quantities into Great Britain during the period in which the Moluccas were British possessions; but Poole in his *Statistics of Commerce* says it is now rarely seen in Britain.

The kyaboka wood of commerce is brought from Ceram, N. Guinea, the Aru and other islands of the Moluccas, to Singapore, being much esteemed as a fancy or ornamental wood for cabinet-work. Of late years its estimation seems to have decreased in Europe, but it is still much valued by the Chinese, and is sold by weight. It is sawn off in slabs from 2 to 4 feet long and 2 to 8 inches thick. It resembles the burr of the yew. It is used for making small boxes, writing-desks, and other fancy ornamental work. It is tolerably hard, and full of small curls and knots; the colour is from orange to chesnut-brown, and sometimes red-brown.—*Holtzapfel, J. R. M. E. of 1855; Cat. Ex., 1851; Sing. Cat. Ex., 1861; Poole's Statistics.*

PTEROSPERMUM LANCÆFOLIA, Roxb., of Assam, has a dense strong wood.

PTEROSPERMUM RUBIGINOSUM. Heyne, W. A. Prod. p. 68. The Kara toveray, TAM., of Tinnevely, is a large and very fine tree; is very common in the Tinnevely districts, the Wynad, Anmallays, and generally throughout the western forests up to about 8000 feet; the timber is excellent, the wood is much in use for building and other purposes.—Beddome, Fl. Sylr. p. 106.

PTEROSPERMUM SEMI-SAGITTATUM, Buch., of Assam, flowers in March, April, and May, with large, white, fragrant flowers.—Voigt.

PTEROSPERMUM SUBERIFOLIUM. Willd.

Velago xylocarpa, Gertn.	Pt. Heyneanum, Wall.
Welang-gas, . . SINGH.	Lolugu ohettu, . . TEL.
Teddee maram, . . TAM.	Lolugu karra, . . „
Nolika ohettu, . . TEL.	

A native of all the mountainous tracts of India, the Godavery forests, and the Ginji Hills. Wood pinkish and hard, but is generally hollow in the

centre. In Ceylon, it is common up to an elevation of 2000 feet, especially in the drier parts of the island. The wood is useful for many purposes where toughness is required, such as poles of bullock carts, betel trays, and gun-stocks. A cubic foot weighs 36 lbs. Flowering time the beginning of the hot season, March, April, and May. Trunk erect, growing to be a timber tree of middling size.—*Thw.; Mr. Rohde's MSS.; Mr. Mendis; Tennent; Voigt; Capt. Beddome.*

PTERYGOTA ROXBURGHII. Sch. and Endl. Sterculia alata, Roxb. A tree of Sylhet and Chittagong, with large, iron-coloured flowers, streaked with crimson and yellow. At Sylhet, its seeds are eaten by the natives as a cheap substitute for opium.—Roxb.; Voigt.

PTILONOPUS CINCTUS, a white-headed pigeon of Timor. Pt. superbus and Pt. iogaster, green and purple doves. The Neilherry wood-pigeon is Pt. Elphinstonei, Sykes, also named the Palumbus Elphinstonei, Sykes.

PTILONORHYNCHUS HOLOSERICEUS, the satin bower bird, is conspicuous for the satin texture of its glossy black plumage. The satin bower bird, and other species allied to it, long before the construction of their nest, and quite independently of it, weave with twigs, firmly planted in a platform of various materials, an arbour-like gallery of uncertain length, in which they amuse themselves. They pursue each other through it; they make attitudes to each other, the males setting their feathers in the most grotesque manner. The ornamentation of the platform on which the bower stands is an object of constant solicitude to the birds. Scarcely a day passes without some fresh arrangement of the shells, feathers, bones, and other decorative materials, which they bring from long distances in the bush for this purpose, and of which they immediately appropriate every fragment placed within their reach when in confinement.—Gould, Ornithology of Australia.

PTOLEMAIS of the Greeks, the modern Akra or Acre.

PTOLEMY, CLAUDIUS, or Claudius Ptolemæus, generally known as Ptolemy the Geographer, lived about A.D. 138. He was a mathematician of Pelusium, and is celebrated for his system of the world, in which he placed the earth as the centre. His geography is a valuable work, and was printed at Amsterdam in 1618, folio; his treatise on Astrology in 1535, and his Harmonica at Oxford in 1683. Although his Map of India is exceedingly faulty,—a work which has travelled down to us from the second century of the Christian era,—it must have possessed something worthy to recommend it, and to keep it alive. Taxila, almost due north of Barygaza, is placed by Ptolemy 11° to the east of it; and the mouth of the Ganges, which was fixed by land measurement from Taxila and Palibothra, is placed 38° to the east of the mouth of the Indus, the true difference being only 20°. As a general rule, the Greeks would seem to have designated the various peoples whom they encountered by the names of their principal towns. Thus we have Kabura and the Kabolitæ, Drepsa and the Drepsiani, Taxila and the Taxili, Kaspeira and the Kaspeiræ. The names of other peoples and towns are recorded by Ptolemy, but few of them can now be identified. The Parsee, with their towns Parsia and Parsiana, General

Cunningham takes to be the Pashai, or people of the Panjhir or Panshir valley. The true name is probably Panchir, as the Arabs always write j for the Indian ch. According to Ptolemy, the three great passes in the western chain of mountains, the Pyle Sarmatæ, the Pyle Albanie, and the Via Caspia, were each closed by large beams of wood pointed with iron. In the midst of the narrow valley flowed a river. The southern extremity was protected by a castle built on a high rock. This defence was to prevent incursions from the people of the north. It is thought likely that the Pyle Sarmatæ is the same with the Porta Ibericæ, or Porta Caucasica, mentioned by Strabo, and the present pass or valley of the Terek. The two latter, the Pyle Albanie and the Via Caspia, merely bestow two names on one place, which is the pass now called Derbent. But there was another, the Porta Cumana, that lay farther westward. Pliny notices it particularly, describing its fortress by the name of Cumania. These defiles, as keys of the east, have always been vigilantly guarded by the possessors. But Leon the First rather chose to incur an inroad from the barbarians than be at the smaller expense of keeping the gate that fixed their boundary. Justinian knew better, and concluded a treaty with Kobad, king of Persia (A.D. 532), agreeing that this pass should be protected by both sovereigns in common, or, if totally confined to Kobad's troops, the Roman should pay the Persian monarch in gold in reward of the double service. Ptolemy makes mention of the Arcati soren, or Arcot, and his tables show an acquaintance with the whole series of ports on both sides of the Bay of Bengal, though less of those on the east side, and on to China. In the last map of his volume, that which contains the Aurea Chersonesus and the Iabades Insulæ (supposed to have meant respectively the Malayan Peninsula or Sumatra and the Java Islands), he places a country far to the eastward of the Aurea Chersonesia, under the equinoctial line, which he states to be occupied by Æthiopes Ichthyophagi or Negro fish-eaters; the first term being that employed by the Romans to distinguish the black and woolly-haired Africans from the Mauritanian and other brown races of the east; and the second, that usually applied to all nations who derived a portion of their subsistence from the sea. The system of naming nations from the food which formed their chief means of support, seems to have been very prevalent among the ancients; witness Hippophagi, the horse-eating Tartars, Lotophagi, lotus-eaters, etc.; and these names are sometimes found to contain the only existing description of the habits of the people on whom they were conferred, as in the present instance. Dr. Leichhardt, in his overland journey from Sydney to Port Essington, found some tribes of genuine Lotophagi on the lagoons of the tableland. The position of this country with regard to the Aurea Chersonesus agrees well with that of New Guinea, the great seat of the Papuan race. The existence of a Negro people at so remote a spot, which he must have learned from the information of Indian navigators, seems, indeed, to have led Ptolemy into the great error of his system; for, believing that the country of the Æthiopes Ichthyophagi formed part of the continent of Asia, he has made that continent, in his general map of the world, come round by the south and join the

African continent about Point Prassum, in latitude 15° S. (the then southern known limit of the east coast of Africa), thus making the Indian Ocean and the seas of the Eastern Archipelago form one vast inland sea.—*Rennell's Memoir*, pp. 35, 241; *Cunningham's Ancient Geog. of India*, pp. 9, 31, 32.

PTOLEMY LAGUS, or Soter, was the son of Philip of Macedon by his concubine Arsenece. He was a favourite of Alexander the Great, on whose death he obtained Egypt, Lybia, and part of Arabia, to which, on the death of Perdiccas, he added Cælo-Syria, Phœnicia, Judea, and the isle of Cyprus. He made Alexandria his capital, and built there a lighthouse, called the Pharos, as a guide to pilots for that harbour. Merchandise from Europe was carried thence up the Nile to the city of Coptus (probably near Keueh), and conveyed across the desert from thence to the seaport of Myos Hormos (probably near Cosseir) on the Red Sea. He dug a canal from a branch of the Nile to Damietta, a port on the Mediterranean. The canal was 100 feet broad, 30 feet deep, and 10 or 12 leagues in length, extending in fact to the 'bitter wells.' He meant to have continued it to the Red Sea, but desisted from fear that the Red Sea was 3 cubits higher than the land of Egypt! That this canal, though deeper than that of M. de Lesseps, did not succeed, is evident from the fact that in B.C. 277 Ptolemy Philadelphus again changed the direction of Indian traffic. Ptolemy Lagus died B.C. 285.

PTOLEMY PHILADELPHUS (B.C. 287-246), son and successor of Ptolemy Lagus, was so surnamed ironically, because he killed his two brothers. He was a great encourager of commerce, and a liberal patron of learned men. He sent Dionysius to visit India. He constructed considerable fleets both on the Red Sea and the Mediterranean Sea. On account of the dangers attending the port of Myos Hormos, he sent an army to construct the haven of Berenice, in which the ships engaged in Indian commerce took shelter in great security. Trade increased enormously by the new route, and Alexandria became rich and famous. On the recommendation of his chief librarian (Demetrius Philaretus), he is said to have sent a Jew of the name of Aristæas to Jerusalem, to ask the high priest for a MS. of the Bible, and for seventy interpreters. Others maintain that the Hellenistic Jews who lived at Alexandria, and who had almost forgotten their native language, had this translation made for their own benefit. Certain it is, that about the beginning of the 3d century B.C. (285), we find the Hebrew Bible translated into Greek, in that version called the Septuagint.

Ptolemy Philadelphus constructed a canal from Arsenece (near the present Suez) to the Pelusiæ branch of the Nile. The city of Berenice was on the western side of the Red Sea, 450 miles below Suez, from whence the merchandise was transported across the desert of Thebais to Coptus on the Nile. Ptolemy Philadelphus died B.C. 246, aged 64.—*Muller's Lectures*, p. 86; *As. Res.* i. p. 369.

PTOLEMY EUERGETES, son and successor of Ptolemy Philadelphus, declared war against Antiochus Theos, to avenge the death of his sister Berenice, the wife of Antiochus. He made himself master of Syria and Cælicia, and was extend-

ing his conquests when the news of a revolt recalled him to Egypt. He soon quelled the insurgents, and by the prudence of his reign acquired the title of Euergetes or benefactor. He died B.C. 221, and was succeeded by

PTOLEMY PHILOPATRES, ironically so called because he had poisoned his father, his mother, and several of his relatives. He favoured the Jewish nation. He died B.C. 204. It was the opinion of Major Rennell that under the Ptolemies the Egyptians extended their navigation to the extreme points of the Indian continent, and even sailed up the Ganges to Palibothra.

PTYADACTYLUS GECKO, the Chik-chak, a lizard of Labuan. It is very domestic, like the chaplak of India. It is said to be luminous on occasions.

PTYCHOSPERMA ARFAKIANA, *Beccari*, of New Guinea, at 5000 feet elevation attains a height of 80 feet. *Pt. disticha*, *Miguel*, the Areca disticha, *Griffiths*, a plant of Assam, up to 4000 feet. *Pt. Musschenbroekiana*, *Beccari*, a palm of Ternate, up to 3000 feet. It grows to 90 feet.—*Von Mueller*.

PTYCHOTIS, a small genus of umbelliferous plants, of which the seeds of some of the species have formed articles of condiment and of medicine from very early times. The genus extends from the south of Europe, through the oriental region, to all parts of India.

Ptychotis ajowan, *D. C.*

<i>Ligusticum ajowan</i> , <i>Roxb.</i> , <i>Flem.</i>	<i>Sison-ammi</i> , <i>Ainslie</i> . <i>Athamantia ajowan</i> , <i>Wall.</i>
<i>Amus</i> , ARAB.	<i>Nankhab</i> , PERS.
<i>Boro-josh</i> , BENG.	<i>Ajmodam</i> , SANSK.
<i>Ajouain juvani</i> ,	<i>Omam</i> , <i>Omamu</i> , <i>TAM.</i> , <i>TEL.</i>
<i>Blahop's weed</i> , ENG.	<i>Vamam chettu</i> ,

This is one of the most useful of the Umbelliferae, and an excellent remedy in flatulent colic. Cultivated in India everywhere, and much used there. Flowers small, white; small fruit. Seeds yield a volatile oil, from which is obtained ajowan camphor or thymol, a valuable antiseptic. Seeds of an aromatic smell; warm, pungent taste; much used by the natives as a substitute for aniseed, both as an aromatic and in colic; also as a deobstruent in ischuria and dysmenorrhoea, and as a stimulant in catarrh and hemicrania. Employed as an infusion.—*Voigt*; *Roxb.*; *O'Sh.*

Ptychotis coptica.

Bal-ajwan, HIND. | *Coptic ammi*.

A plant of Candia and Egypt, used as a stimulant aromatic.—*O'Sh.* p. 357.

Ptychotis involucreata, —?

Chant, *Radhani*, BENG. | *Anisun*, *Aniabu*, HIND.
Used as a substitute for parsley.

Ptychotis montana, *Graham*, *Bhaphallee*.

Ptychotis sylvestris, *Royle*. Arab-ajwan, HIND. Grows in the khadir lands of the Saharunpur district, and used as a stomachic aromatic remedy in flatulence.—*O'Sh.* p. 358.

PU-AN-KU. According to Chinese mythology, the primeval man who came out of the mundane egg; he lived 18,000 years. See Pun-ku-wong.

PUAR or Pouar, a highly respectable Maharatta family at Multan, 30 miles N.E. of Poona. In the early periods of Maharatta history, the Puar family appears to have been one of the most distinguished. They were of a Rajput tribe, numbers of which had been settled in Malwa at a remote era, from whence this branch had migrated

to the Dekhan.—*Malcolm's Central India*, i. p. 97.

PUBB MOUNTAINS, in length are about 90 miles, from C. Monze to lat. 26°. They are supposed to equal those of W. Sind, viz. 2000 feet; the highest part is about lat. 25° 30' N. In lat. 25° 3' N., and long. 66° 50' E., they are crossed by the Guncloba pass, described as stony, and of easy ascent and descent. The Pubb river falls into the sea at Cape Monze. Hot springs occur in the neighbourhood. A district on the river, called Chuha, is occupied by a people of that name, who are said to be of Sumrah or Brahui origin.

PUBERTY amongst Muhammadan girls is called Baligh-hona; P'haili sir myli hona; also Burron men milna; and amongst the poor and uneducated its occurrence in a girl is celebrated with music. With Hindus and the non-Aryan races, the girl is put outside the house till the time of purification occurs.—*Herkel*.

PUBLIC WORKS, a department of the Executive Government of British India which attends to construction, irrigation, repairs.

PUBNA, a town in Bengal, about a mile from the left bank of the Pudda, in lat. 24° N., and long. 89° 12' E. It gives its name to the flat, fertile district of Pubna, which lies to the N. of Jessore, between lat. 23° 34' and 24° 36' N., and long. 88° 55' and 88° 48' E. Area, 2606 square miles, and population, 700,000. The town is 130 miles from Calcutta.

PUDUKOTTAH, an independent state in the centre of the Peninsula of India, with an area of 1046 square miles, a population of 816,695, or 3027 to the square mile, and a revenue of Rs. 5,00,000; but the public means is greatly lessened by having three lakhs in inams and jaghir. The ruler is styled the Raja Tondaman Bahadur, and he and his people are of the Kollari race. It is surrounded by the Tanjore and Trichinopoly districts. The Pudukottah chief did good service to the British during the wars around Trichinopoly in 1758, and remained unshaken in fidelity when all the other Polygar chiefs were in arms. He is the only chief in the south of India who pays no tribute. Pudukottah, the chief town, is in lat. 10° 23' N., and long. 78° 51' E., and has a population of 13,078 souls, on a low site surrounded by thick jungle. The raja holds also Kilanelli fort in S. Tanjore.

PUDUVELIGOPURAM, about 1½ miles N. of Negapatam, a tall, weather-beaten tower, known as the China Pagoda, Black Pagoda, Old Pagoda, Jaina Pagoda. It was removed about 1870. Supposed by Burnell to be a Vimana.

PUDWUL. HIND. *Trichosanthes angina*. Tr. dioica is a small snake-gourd the size of an egg; the seed is sown in the cold season, and yields fruit from March to September.—*Riddell*.

PUERARIA TUBEROSA. *D. C.* A tall, woody, twining plant of the south of Asia, up to 4000 feet. Its large tubers are edible, and might improve by cultivation.—*Von Mueller*.

PUGHA, in the territories of the maharaja of Jamu and Kashmir, is a small valley with a lake, in which borax is deposited. The portion from whence the sohaga or tinal is collected has a fine stream running through it into the river Indus; the portion producing the borate of soda is, if not watered by, still under the influence of, thermal springs, varying from 180° to 167°; the tempera-

ture of the streams into which these empty being in July 56°. The entire produce of the valley might be roughly calculated at 20,000 kucha maunds of 38 lbs. The greater portion finds its way to Rampur in Bishahr; some to Kulu, via Mandi, to the lower hills; and a small quantity, via Chamba, to Nurpur. Nearly all that going via Rampur is taken into the lower hills in the neighbourhood of Sabathu, Bhaji, etc., where wood is procurable, and where, during winter, it is refined by the carriers who go there to graze their flocks. It thus becomes borax, in which state it nearly all finds its way to Jugadri in the plains. The whole of the lake plain of Pugha is covered, to the depth of several feet at least, with white salts, principally borax, which is obtained in a tolerably pure state by digging; the superficial layer, which contains a little mixture of other saline matters, being rejected. There is at present little export of borax from Pugha, the demand for the salt in Upper India being very limited, and the export to Europe almost at an end. It has long been known that borax is produced naturally in different parts of Tibet, and the salt imported thence into India was at one time the principal source of supply of the European market. There is another locality near Rodok, in Chinese territory, yielding it, from which the route to the plains is via the Niti pass; this borax is said to be of a very superior quality, nearly pure, and requiring little or no refining.—*Turner's Tibet*, p. 406; *Blane in Ph. Tr.*, 1787, p. 297; *Powell, Handbook*.

PUGHMAN or Patmghan, a mountain range, subordinate to Hindu Kush, running along its S. base, generally from N.E. to S.W. Estimated elevation, 13,000 feet. Oona pass, lat. 34° 23' N., and long 68° 15'; 11,320 feet. Erak summit, lat. 34° 40' N., and long. 68° 48' E.; 12,480 feet. Always covered with snow. Its south-eastern brow overhangs the delightful region of Koh-i-daman and also Kabul; its northern face forms the southern boundary of the Ghorband valley.

PUGIONUM CORNUTUM. *Gärtner*. A herb grown as a vegetable by the Mongols, from the Caspian Sea to China.—*Hance*; *Von Mueller*.

PUIMANGU, of Kashmir, a dealer in shawl-wool yarn.

PUJA. SANSK. Worship of the Almighty or of idols; any Hindu worship. Durga puja is the worship of the goddess Durga; but it assumes various forms, and is attended by a variety of ceremonies, according to the circumstances under which the worship is performed. A Pujali or Pujari is any worshipping priest; the officiating Brahman or priest of a temple; an inferior priest. Puj, a devotee.

PUJAWALIYA, a book of legends in Sitighalese, relating principally to Gautama Buddha.—*Hardy*, p. 440.

PUJA WIPU, a ceremony celebrated with splendour in Trevandrum. Kumarasamy (the son of Siva), who is kept at Kumara Coll, near Puttmanabapuram, is brought to Trevandrum for the celebration of the Dashara feast. It costs the State 3000 fanams annually in cash, exclusive of his travelling expenses. The god is supposed to receive these 3000 fanams in consideration of the difficult task he has to perform in crossing the three great rivers, Neyour of Neyattencuray, Tambrapurni of Cullitray, and the Caramanayaur of Trevandrum. This deity, having lost caste because

he married a girl of the Curava caste, by name Vulley, and one of the Parava caste, by name Thalvayanay, is not allowed entrance inside Padmanabaswamy pagoda, but is made to reside in a pagoda outside the fort near Chalay, called Ariya Chalay. After the close of the ceremony, for the celebration of which his presence is invited, the god receives the fee of 3000 fanams, and is taken back to his pagoda at Padmanabapuram, escorted by a company of the Nair brigade, a good number of pagoda girls, the tahsildar, and some petty officials, and is not disturbed till the next feast. Dancing girls belonging to many of the pagodas in South Travancore also grace the occasion with their agreeable presence and remarkable dancing, creating during their short stay of ten days a great deal of disturbance by their immoral and obscene conduct, and thereby giving a good deal of trouble to the police authorities. On the day that this ceremony closes, his highness the maharaja proceeds in his royal car to Pujepurah.

PUKALENTI, said to have been a contemporary of Kambur, but he was one of the court poets of Varaguna Pandiyan, king of Madura. He wrote a history of Nala and Damayanti in Venpa metre, entitled Nala Venpa; also the Irallina Surukkam, enumerating the metaphors to be used in erotic poetry.

PUKAT, a Chinese trading vessel employed in the eastern seas; Prahu.

PUKEO, a money of account in the island of Lombok, equal to 5 attaks or 1000 cash; about 9 shillings.—*Simmonds's Dict.*

PUKHAWAJ. HIND. A kind of drum, a timbrel.

PUKHTUN-KHWA and Watan-khwa, names by which the Afghans designate their own country.

PUL or Pool. Abul Fazl says that the pool of olden days was equal to 4 tolas; Ferishta, again, gives 1 or 1½ tolas.

PULAHA, a Hindu sage, is described in the Bramhanda Purana as a tall, aged man, in the dress of a mendicant, who lived as a hermit on Mount Mandara. He is said to have written one of the Smriti. One son, Variyana, is said to have introduced the Hindu custom of preserving the ancient fire; and another son, Sahishnu, originated the austerities practised by the Jogi ascetics.—*Ward*, iv. p. 18.

PULAIMAKAN, a Tamil term, applied to a Paraiya or Pulaya.—*Wilson*. See Pariah.

PULASTYA, one of the Smriti writers of the Hindus, and author of an astronomical work. He had two sons. He is described as a tall, dark man, and dressed as a mendicant.—*Ward*, iv. p. 17.

PU-LA-TE, a wandering tribe found on the island in the Baikal lake. Mr. Bell says the tribe are natives of Siberia, and are called by the Russians Brustsky, but by themselves Buraty. They live in tents all the year; and, having large flocks of sheep and many cows and horses, they remove from place to place, as the convenience of grazing requires. Their language has a great affinity to that of the Kalmuks, and they have priests among them who can read and write that language.—*Staunton's Narrative*, pp. 51, 52.

PULAYAN or Pulian, of Malabar, is a low and servile caste, often slaves. The Tandupulayan section of this Travancore tribe are so named

because their women wore a dress of the leaves of the Tandu water plant. Its leaves were cut into lengths a foot long, and tied round the waist so that the strings unwoven reach to the knees, hanging like tails before and behind. The men wear the ordinary lower cloth of the Hindus. They are said to have been without cloths, and to have been compelled by an ancient king to clothe themselves, and the women adopted this. They are also called Kuri Pulayan, meaning Pit-Pulayan. They speak Malealam, worship the sun and heavenly bodies and their ancestors' spirits, which are supposed to dwell in the marine lagoons, and the phosphorescence of its waters is supposed to indicate their presence. The Pulayan eat fish, cooked in arrack, with roots of water plants. They drink largely. They dwell in the Malealam country south of Cochin, between the backwater and the sea; and a section of them is more south, near Alleppey, who are called Kanna Pulayan, and their wives on maturity wear a better kind of apron. They are virtually slaves.—*Rev. W. J. Richards' Indian Antiquary*, p. 120.

PULEETA. HIND. A lamp charm.

PULEX PENETRANS, or *Dermatophilus penetrans*, the Chegoe, a troublesome and noxious small flea of the W. Indies and S. America, which penetrates into and deposits its eggs in the skin of man.

PULGOONDHUN. HIND. The plaiting of a girl's side locks, a Muhammadan ceremony.

PULIAR and Kader, as also the Malai-Arasar and Muduwar, all inhabit the Annimalay Hills. They all gather the rich natural products of the forest,—cardamoms, honey, wax, ginger, turmeric, resins, millets, soap-nuts, gull-nuts,—and exchange them in return for rice and tobacco. See Puller.

PULICAT, properly Paliyavarkadu, a small town 20 miles N. of Madras, on the Coromandel coast, in lat. 13° 25' N., and long. 80° 21' 24" E., situated on the borders of a large island at the southern extremity of a marine lagoon, called the Pulicat Lake. The Dutch established themselves there in A.D. 1609. The lake is 37 miles from N. to S., and 11 miles across at its broadest part. Communication is open to Madras by Cochrane's canal, 14 miles long, which was excavated about the end of the 18th century. Pulicat is close to the village of Coromandel, which again gives its name to the coast of the eastern side of the Peninsula of India. The lake has many islets, one of them at Sriharikotta is covered with jungle. Off the coast here are the Pulicat shoals, lat. 13° 25' N., and long. 80° 18' E.

PULINDA, ancient dominant tribes in Central and Northern India, and on the Indus, alleged barbarians.—*As. Res.* x. p. 87; *Dowson*.

PUL-i-SIRAT, a bridge, according to Muhammadans, over which the dead have to pass. If in life the traveller have been good, he passes safely; if an evil-liver, the sword-like bridge cuts him in two.

PULLA. HIND. A kind of carp found in the Indus and Ganges rivers in the four months that precede the periodical swell of these rivers. The pulla, called by the Sindi 'pallo,' is the bilsha of the Ganges, the sable or black hesh, also called the tamarind fish. The usual weight is about two pounds, and the body averages 20 inches in length. The finest are found ascending the Indus as far as Bukkur, between January and April, and

are rare above the island of Bukkur. It is caught in abundance and by various methods, sometimes by fishermen perched on a narrow-necked earthenware pot, which serves the double purpose of support and a reservoir for his fish and tackle; others buoy themselves up by means of dogskins kept inflated from a mouthpiece. Some ten or fifteen fishermen are to be seen dropping slowly down with the current.—*History of the Panjab*, i. p. 8; *Burton's Scinde*, ii. p. 256.

PULLA PASSAONA, HIND., or spreading the cloth or scarf, is the figurative language of entreaty arising from the act of spreading the garment preparatory to bowing the head thereon in token of perfect submission.—*Tod's Rajasthan*.

PULLER. TAM. A race in the south-west of the Peninsula of India, supposed to have formerly been in a state of slavery, but their position now is solely dependent on their wealth. Both men and women work well, take part in all agricultural labour, the women in this particular vying with the men. The Puller women go about with their chests exposed, and as a rule cannot be induced to cover their breasts. Previous to British rule, the Puller, who inhabited the forests and mountainous districts of the Malabar coast, were regarded by the settled inhabitants as inferior to the beasts of prey, and were not even permitted to erect houses for themselves. A shed supported on four bamboos, and open on all sides, sheltered them from the rain, but not from the inclemency of the weather. They dared not venture on the public road lest their steps should defile it; and when they perceived any person approaching them from a distance, they were required to utter a yell or loud cry, and make a wide circuit to let him pass. The Puller in Tinnevely are predial slaves of the wealthier classes. They are the lowest Hindu grades of the right-hand caste. They bury their dead, have pujaris of their own castes.—*Wilson; Campbell*, p. 133. See Puliar.

PULIAR or Pulliyar, in the Tamil country, a form of the Hindu deity Ganesa.

PULLICATES, a commercial term for cotton checked handkerchiefs of various colours.

PULLICONDAH, a village 97 miles W. of Madras, near the right bank of the Palar river. It has a handsome pagoda, in front of which is a pagoda supported by four lofty pillars.

PULNEY, a small town that gives its name to a spur, called Kurragherry, of the western range of mountains which runs out boldly into the Madura district, and on which a sanatorium is growing up. Pulney is to the north of this range. A festival is annually celebrated there, and the worshippers of the idol Subramaniya crowd to the place. On approaching the town from the east is seen two massive rocks lying to the south, and about half a mile distant from the road and from each other. The elongated one to the east is named Idumba hill; the larger and rounder mass is Pulney rock, the summit of which is crowned by a temple, different parties moving up the rock to the shrine of the divinity, beating of drums and braying trumpets cry out Harakara—meaning O Siva! great Siva!—in praise of their deity. The local name of the god is Pulney Andi, also Dandayathapani (wielder of the spear), Arumugam (six faces), and Kartikeia (the god of war). His Puranic name is Skanda. He is the youngest son of the god Siva, and the hero of the Skanda Purana.

PULO BRANI, an island near Singapore, occupied by Bugis settlers employed as pine-apple planters and fishermen. The women manufacture gold and silk sarongs and coarser articles. They are Muhammadans, but drink the fermented juice of the pine-apple. Their features are regular and open, their faces inclined to an oval, eyes large and dark, and are much elevated. Women have oval faces and very perfect figures, but at puberty their teeth are filed close to the gum.—*Dr. J. S. A. Little.*

PULO CONDORE, from its proximity to the entrances to the river Mei-kong, in some measure commands the access to Saigon, and it is also situated in the direct course of vessels passing up and down the China Sea. In other respects Pulo Condore appears of little importance.

PULOMAN, in Hindu mythology, a Danava, and father of Sachi, wife of Indra.—*Douson.*

PULO NYAS or Nias is the largest of the islands off the west coast of Sumatra, being 18 or 21 miles in breadth. In general, the land is high, well clothed with trees, and partly under rice cultivation. Many of the inhabitants were formerly purchased for the Dutch settlements at Batavia, the women being fairer than those of the adjoining coast.

PULP. When the coffee berry is picked from the tree it bears a close resemblance to a ripe cherry, both in size and appearance; and several processes have to be gone through before the article known in commerce as coffee is produced. In the first place, the pulpy exterior of the cherry has to be removed by the process of pulping, which separates the seed and its thin covering, called the parchment, from the husk. When the pulping process is completed, we have the parchment coffee by itself in a cistern, and the next process consists in getting rid of the mucilage with which it is covered. The pulp contains two seeds. They are covered by a viscous substance called gum, and integument known as the parchment, from its resemblance when dried to that animal product, and a pellicle named the silver, which is very like gold-beater's skin, and the grains of coffee, which are styled beans; sometimes there is only one bean in a cherry, which takes a more rounded form, and is called pea-berry. This is caused by only one of two embryos coming to maturity, whilst the other is abortive, the rudimentary form of which is always apparent.

PULPARRAH, a very sacred place, situated about six miles from Surat on the river Tapti, and usually preferred to the immediate locality of the city. Pulparrah abounds with altars, Hindu temples, and sacred trees, and possesses a solemnity of appearance in admirable accordance with its sacred character.—*Postans' Western India*, i. p. 283.

PULQUE. The saccharine and mucilaginous sap of the Agave Americana may be made to flow by incisions in the stem; it readily ferments, and in Mexico yields on distillation an agreeable ardent spirit, called vino merca. The incisions are made just before the flower scape is ready to burst. The dried flowering stems of A. Americana also afford an almost impenetrable thatch; the fresh green leaves are cut up and given to cattle, and the centre of the flowering stem, split longitudinally, is by no means a bad substitute for a European razor strap, owing to minute particles

of silica forming one of its constituents. The two products most deserving attention, however, are the extract which forms a lather like soap, and the fibre known in Southern India as the pita.

PULSES, species of the Fabaceæ or bean tribe of plants, are largely used in the E. Indies as food for man and beast. They are eaten with, and supply to rice and some other cereals, the nitrogenous or flesh-forming material in which these are defective. Bengal gram or Cicer arietinum, or chick-pea, occupies an important position. It is largely used by the people, and constitutes, besides, the chief horse food of Northern and Western India. It can be used for this purpose for a length of time without causing heating, or the other deleterious effects ordinarily produced by the too exclusive employment of peas and beans. Other pulses, known as dhal or dhol, are also very largely eaten in Northern India, along with rice. All the pulses occupy an important position in the food of the people of the interior plains. The generic name in Malay and Javanese for all leguminous plants is Kachang, by adding an epithet to which we have the name of the species.

The food species of the Fabaceæ most used and cultivated in the S. and E. of Asia are as under:—

Arachis hypogæa, L., earth-nut.
Cajanus Indicus, Sprenger, 2 varieties.
Canavalia gladiata, D.C., 3 varieties.
Cerantonia siliqua, L.
Cicer arietinum, Linn., chick-pea.
Cyamopsis psoraleoides, D.C., beans.
Dolichos uniflorus, Lam., horse gram, 2 varieties.
D. Sinensis, Linn., 4 varieties.
Eryum lens, Linn., lentil, tare.
Faba vulgaris.
Lablab cultratum, D.C., 6 varieties.
L. vulgare, Savi., 7 varieties.
Lathyrus aphaca, Linn., yellow vetchling.
L. sativus, Linn., blue-flowered chickling.
Pachyrhizus angulatus, Rich., the root only.
Phaseolus aureus, Koch.
P. lunatus, L., country French beans, 6 var.
P. mungo, L., green gram.
P. nanus, L., common dwarf kidney bean.
P. radiatus, L., green gram.
P. Roxburghii, W. and A., 2 varieties.
P. trilobus, Ait.
P. vulgaris, Linn., French bean, haricot, common kidney bean.
Pisum sativum, Linn., common pea, 3 varieties.
P. arvense.
Psophocarpus tetragonolobus, D.C., Goa bean, chevaux de frise bean.
Soja hispida, Moench., soy.
Vicia faba, Linn., garden bean.
V. sativa, Linn., common vetch.
Wistaria Sinensis.

Several species are regular objects of cultivation, as *Phaseolus lunatus* and *Roxburghii*, *Dolichos kachang*, *Lablab vulgaris*, *Soja hispida*, *Cajanus Indicus*, and *Arachis hypogæa*.

The ordinary pulses belong to the tribes *Viciæ* and *Phaseolæ* of the order Fabaceæ. All the cultivated varieties of beans have originated from *Faba vulgaris*; all the varieties of garden peas have originated from the *Pisum sativum*, a native of the south of Europe, and the field pea is the *Pisum arvense*. The flour of lentils contains more nitrogenous matter than any other of the leguminous plants.—*Cat. Ex.*, 1862; *Crawford's Dict.* p. 361.

PULUC-ODIAL SINGH. A name in Ceylon for the young shoots of the palmyra palm boiled; when eaten raw, they are termed Odial; but are also called Kalinga or roots.—*Sinmonds' Dict.*

PU-LU-SHA-PU-LO or Parshawar, capital of Gandhara.

PULUT. MALAY. A kind of rice. It is boiled in a bamboo joint by the Malay and Dyak races of Borneo. Considered as a delicacy, and much prized for its nutritious qualities.

PULWAR is a smaller description of Ganges boat than the puteli, and of neater build. It is used by natives in travelling, by European travellers of humbler means, or as a cook-boat, or for servants. See Boats.

PUMICE-STONE.

Fan-shi,	CHIN.	Batu-timbul, . . .	MALAY.
Pimpsteen, . . .	DAN.	Pedra pomes, . . .	PORT.
Puimsteen, . . .	DUT.	Pemza,	RUS.
Pierre ponce, . .	FR.	Piedra pomez, . . .	SP.
Bimstein,	GER.	Pimpsten,	SW.
Pietra pomicie, .	IT.	Poosa-rai,	TEL.
Pumex,	LAT.		

A light, spongy, vitreous stone, found usually in the neighbourhood of volcanoes, and supposed to be a lava or volcanic glass. It is used for polishing metals and marble, and smoothing the surface of wood and pasteboard. Pumice is quarried and exported in large quantities from Lipari and the Isles Ponza, in the Mediterranean. Pumice-stone in small pieces and very hard is found on the sea-coast near Nizampatam. Numerous fragments of white pumice are found on the north-east point of Battam, and within the Singapore Strait or Pulo Sambo, called by Malays Batu-timbul, or floating stone, who say it is found floating on the China Sea, and scattered on the beaches of the eastern coast of Johore. It is from some of the volcanoes. Pumice-stone occasionally collects in the seas of the Archipelago so largely as to polish brightly the copper of ships passing through the masses. In 1883, an eruption occurred of a volcano in Java, and large quantities of pumice-stone were thrown out; ships sailed through it floating on the neighbouring seas. The pumice of the great Tomboro in Sambawa is blackish.—*Bennett, Whal. Voy.* ii. p. 67; *Faulkner; Rohde's MSS.* See Aden.

PUMMALO or Pumelo, or Citrus decumana, Linn., Pamplemose, the shaddock. It has been ascertained that the mango, orange, punmalo, sweet lime, biliabi, and guava all bear pruning of the old wood, and that they produce much more fruit in consequence. Old branches, if cut off the mango near its base, are apt to produce canker in the trees, unless the cut surface is protected from the air by tar or white paint.

PUMP.

Pompe,	FR.	Bomba,	SP.
Pumpe,	GER.	Tulunba,	TURK.
Tromba,	IT.		

In India, a number of trials have been made of different appliances for raising water, as belt lift, chain and rope lift pumps, hand, force, and garden-watering pumps; but on comparing the working of these with the ordinary Pe-cottah, it is ascertained that the belt lift pump only raises water to about 12 feet, and that steam power is requisite to keep up the velocity. The chain and rope lift pumps work satisfactorily to a depth of 30 feet, but in deep wells the labour of raising the water is considerable.

PIJMPKIN, Cucurbita pepo.

Kaddu,	HIND.	Labu pringi, . .	MALAY.
Mit'ha kaddu, . .	"		

This vegetable is grown in great abundance in

all parts of the Dekhan. It is much esteemed both by the Europeans and natives. It is generally sown at the commencement of the rains, and requires no particular care; the soil should be light and good. When young, about the size of a goose's egg, if cut and boiled, it will be found to resemble the artichoke-bottom dressed in the same way. The *Lagenaria vulgaris*, Ser., and the *Benincaea cerifera*, are sometimes called white pumpkin. *B. cerifera* is also called the white gourd or white pumpkin.—*Riddell*.

PUN. SIND. The leaves of *Typha elephantina*, used for making mats and baskets.

PUN, uncurrent money; nominal species of currency in India calculated by cowry shells,—in Hindustan, a handful, or about 80 shells, five pun or 400 cowries making an anna or 1½d.—*Simmonds' Dict.*

PUNA or Poon, commonly called Peon in England. It is used for masts and yards. See Poon.

PUNA. HIND. *Ehretia serrata*, a small tree with a white, hard, heavy, strong, durable wood, used by zamindars for their houses and implements. Leaves given as fodder to cattle. Wood not much valued.—*Powell's Handbook*, i. p. 451.

PUNAG, in Bombay, the female plant of *Caly-saccion longifolium*, Roxb.—*W.*

PUNAK. SINGH. Refuse of the cocoanut after expressing the oil, used for cattle, poultry, and manure.

PUNA KAD, in Salem, Kumari, CAN., of Mysore and Canara, is the Pounam of Malabar, the Chena of Ceylon, and the Tungya of Burma. It is a rude system of culture followed in all these countries, wherein secluded tribes and others clear parts of the forest. The Irular races and Kurumbar on the Neilgherries, the Malai-Arasar on the Shevaroy, the Punam cultivators in Malabar, the Kumari cultivators of Canara, and the Karen in Burma, all endeavour to obtain a precarious subsistence by scattering grain after burning the jungle, and thus avoid, to them, the irksome restraints of civilised life. The Kumari cultivators earn a cheap but wretched subsistence, and live in miserable huts. A hillside is always selected, and at the close of the year a space is cleared. The wood is left to dry till the following March or April, and then burned. The ground is then sown with Italian millet, *Panicum Italicum*, as also with rice, *Oryza sativa*. In Canara, the seed is generally sown in the ashes on the fall of the first rain, without the soil being touched by a plough. It is fenced and weeded, and the crop gathered towards the end of the year. A small crop is taken off the ground in the second year, and sometimes in the third, after which the spot is deserted for 7, 10, or 12 years, until the jungle grow sufficiently high to tempt the tribe to renew the process. In Ceylon, the Chena lasts two years, and includes the culture of chillies, yams, sweet potatoes, cotton, hemp, etc. About the middle of the 19th century, in Bekal, the most southern taluk of Canara, 25,746, or one-sixth of the rural population, were engaged in it; but north of that taluk it was carried on by the jungle tribes of Malai Kader and Mahratai to the number of 59,500. Kumari was then prohibited in Mysore, and put under great restriction in the Bombay Presidency; and the Madras Government, in 1860, prohibited it in Government forests, without

special permission, which they commanded to be given sparingly, and never in timber spots. Mr. Cannan, a coffee planter of Wynad, says that in a spot thus treated, only plants re-grow unfit for any building purposes, and he had never been able to get coffee to grow on it.—*Dr. Cleghorn, Reports, 1858; Cleghorn's Forests, p. 126.*

PUNAL. MALEAL. The sacred string worn by Brahmans, Kshatriyas, Vaisya, and artisan castes.

PUNAM. TAM. The full moon, amongst Hindus, a holiday. The Punam, or last day of the month Cartica, is the Macara sancranti, or autumnal equinox, when the sun enters the zodiacal sign Macara or Pisces. On this day the rana of Mewar and chiefs proceed in state to the Chougan, and play at ball on horseback. The entire last half of the month Cartica, from Amavus (the idea) to the Punam, is sacred to Vishnu, who is declared by the Puranas to represent the sun, and whose worship, that of water, and the floating lights placed thereon,—all objects emblematic of fecundity,—indicate the adoration of the powers of nature.—*Tod.*

PUNATU, SINGH, is the pulp of fruit of the palmyra tree, dried in the sun, then smoked in the houses, and eaten as cakes, for soup, or in curry. The centre and its top are soft and spongy, containing a kind of coarse farina, intermixed with the under fibre, and in Ceylon these parts are laid out to attract for the sportsmen hares and wild hog.—*Tenient's Ceylon.*

PUNAWA, a village 14 miles to the eastward of Gaya, between two hills of grey granite. To the north there is a fine old square tank called Budhokar-tal, and to the east another tank called Karamar-tal. The principal object is a pillared temple of Triloknath.—*Beng. As. Soc. Jour. No. 32, 1864.*

PUNCH or **Pukli,** a pass leading into Kashmir, which joins the Baramuli pass at Uri. See Kashmir.

PUNCH. ENG. From the Hindi Panch, five, was so called by the factors of the English E. I. Company at Surat, from the five ingredients used in it,—spirit, lemon or lime juice, spice, sugar, and rose-water. It was called Puntz by Mandelslo, and Paunch by Fryer. The Pentaploa of the Greeks was composed of wine, honey, cheese, meal, and oil. See Panch.

PUNEERIA COAGULANS. *Stocks.*

Hub-ul-yahud, . . .	ARAB.	Arusa-pas-pardab, . . .	PERS.
Hub-ul-kaking, . . .	"	Shaprange, . . .	PESH.
Jouz-ul-fota, . . .	"	Kuchumun, . . .	SHIRAZ.
Kaknuj, . . .	HIND.	Puneer, . . .	SIND.
Rajputuka, . . .	"	Puneer-ja-fota, . . .	"
Bin-punka, . . .	"	Kumri murja, . . .	SYRIA.
Khumzuray, . . .	KAND.	Akedoleon, . . .	TURK.
Halikabeem, . . .	LAT.	Oofadnoon, . . .	YUNNAN.

A plant of Arabia and Sind, used to coagulate milk. Its fruit held in repute in dyspepsia.—*Birdwood's Vegetable Products.*

PUNG. MALAY. A Java wood, equally hard with pilang, and uniformly employed by the natives for pegs in constructing their prahus.

PUNGA or Kurunj Oil.

Kurunj ka tel, . . . HIND. | Kanugu nuna, . . . TEL.
Punga yennal, . . . TAM.

This oil is expressed from the seeds of *Dalbergia arborea* or *Pongamia glabra*. It is chiefly used as a lamp-oil by the poorer classes.—*M. E. J. R.*

PUNGGL. HIND. A musical instrument. Of this there are two varieties,—one made of leather,

and sometimes accompanies the kunchnee-kataefa, or band of dancing girls; the other of pumpkin, usually played upon by jugglers and snake-dancers, etc.

P'UNG-IWO-SHUH. CHIN. Pendulous tubers of a scitamineous plant, a species of *Amomum* or *Curcuma*. It grows in Che-kiang and in the south of China. Its rhizome is used medicinally, but is capable of yielding a fecula like arrowroot.—*Smith.*

PUNGYI, BURM., written Phoungye, meaning great exemplar or great glory, is a name by which the members of the monastic rule of Buddhism are commonly known in Burma.—*Yule's Embassy, p. 23.* See Talapoin.

PUNICA GRANATUM. Linn. Pomegranate.			
Ruman, Kilkul, . . .	ARAB.	Dalima, . . .	MALAY.
Rana, . . .	"	Madala, . . .	MALAL.
Dalim, Darim, . . .	BENG.	Rumom paio, . . .	"
Rimmon of the Bible.	"	Darim, . . .	MURREE.
Tha-lai, . . .	BURM.	Delumghedi, . . .	SINGH.
Anar, . . .	HIND.	Madalam, . . .	TAM.
Gangsalan, . . .	JAV.	Dalim, also Dadima, TEL.	
Daruni, . . .	KAGHAN.	Bulusitun ruman, YUNNAN.	

The pomegranate, a native of the mountainous countries from Syria to the north of India, and Kābul, through Bokhara, Masandaran, and Asia Minor generally, must always have been an object of attention. It is the rimmon of the Bible, the ruman of the Arabs, and was well known to the Greeks and Romans. It is common now in almost all warm climates. Excellent fruits are those of Balabagh, lying under the snowy hills near the Kābul river, and very large quantities are annually imported into the north of India from Kābul and Kashmir. In the Himalaya and the plains, the pomegranate fruit is small, and is sold in the bazar under the name of darmi; the rind, *nas pal*, is used in medicine and in dyeing, on account of its great astringency. The flowers also are the balaustion of the ancients, and in India bulusitun is given as the Greek name of the double flower. They are devoid of odour, but have a bitterish and astringent taste, tinge the saliva of a reddish colour, contain tannin, and strike a black with ferruginous salts. It is of a reddish-brown colour, and smooth externally, but yellow on the inside; usually in irregular fragments, dry, hard, and leathery, of a very astringent taste. It contains of tannin 18·8 per cent., with 10·8 of extractive, and 17·1 of mucilage, and is used for tanning in some countries. The bark of the root was employed as an anthelmintic by Dioscorides and by Celsus, and still is so in India, and it was reintroduced into European practice by Drs. Buchanan and Anderson. The root itself is heavy, knotted, and of a yellow colour; its bark is often sold in strips, sometimes with parts of the root still adhering to it. On the outside, of a greyish-yellow colour; on the inside, yellow, sometimes like that of the barberry. It has little smell. When chewed, colours the saliva yellow; has an astringent taste, without any disagreeable bitterness. It has been analyzed, but the source of its peculiar anthelmintic powers has not been discovered. It contains tannin (about 20 per cent.), gallic acid, resins, wax, fatty matters, and mannite. An infusion yields a deep-blue precipitate with the salts of iron, a yellowish-white one with the solution of isinglass, and a greyish-yellow one with corrosive sublimate, and potash or ammonia colours it yellow. It is apt to be adulterated with

the barks both of box and of barberry. The former is white and bitter, but not astringent; the latter yellow, very bitter, and not thus affected by the above four re-agents. The rind of the wild fruit is useful in diarrhoea and advanced stages of dysentery; the flowers in infusion are slightly astringent; the bark of the root as an anthelmintic against tape-worm, may be given in doses of one scruple in powder, or a decoction may be formed by steeping for 12 hours fresh root-bark of pomegranate. The juice of the fruit is acidulous and sweet, and makes a pleasant sherbet for fever patients. The dried seeds, anardana, of the pomegranate, with their fleshy envelopes, are sold and used in sherbets; are considered cooling. The tree grows easily from seed; and large, fine, juicy fruit, where the soil is good, is often produced. By a continuation of layers from successive plants, the fruit becomes almost seedless.—*Royle; O'Sh.; Gen. Med. Top.; Riddell; Powell.*

PUNIR. TAM. A very light, white-coloured earthy matter, containing a great proportion of carbonate of soda, and from which, as well as from the Over Munnu, soda is prepared. Punir is employed in making glass, in dyeing blue and scarlet, and also by the chucklers in dyeing leather red.—*Ains. Mat. Med. p. 192.*

PUNISHMENTS. The Hindus subject themselves to more devotional austerities, penances, and mortifications, some of which are of a temporary and others of a permanent character, than perhaps any people in the world. In the performance of the tapas, the prescribed acts of devotion are termed mana, or the devotion that proceeds from the heart in profound silence; vauk, or devotion audibly pronounced; neyana, or devotion accompanied by religious ceremonies, purifications, etc. Arjun, in the performance of his tapas, took food, during the first month of his austerities, only once in four days.—*Cole. Myth. Hind. p. 165.*

PUN-JAY-RI. HIND. A candle given to lying-in women.—*Herk.*

PUNJI of Dharwar is a cotton cloth used by well-to-do people to dry themselves after bathing, and also worn as a waist-cloth by poor people. Price one rupee the piece.

PUNKI, TEL., Gyrocarpus Jacquini, grows in the Godavery forests, has a wood soft and light, much used for making cowry boxes and toys; takes paint and varnish well. Tella punki, the Givotea Rottleriformis, is used also for the same purposes.—*Captain Beddome.*

PUNKIR, or peacock and horse modelled yachts and pleasure boats on the Ganges.—*Tr. of Hind.*

PUN-KU-WONG, in Chinese mythology, the first parent, a division of the mundane egg. He breathed on gold and on wool, and from the vapour produced a son and daughter, Yong-ye and Cha Noec. He has many temples, and his images are in wood or clay. See Pu-an-ku.

PUNNAH or Panna, a Native State in Bundelkhand, Central India Agency. Area, 2555 square miles; population, 183,000. It is mostly situated on the table-lands above the Vindhyan Ghats, and contains much hill and jungle land. Its prosperity was due to its diamond mines. The diamonds are found in several places, but especially on the N.E. of the town. See Precious Stones. Diamonds of the first water, or completely colourless, are very rare, most of those found being either

pearly, greenish, yellowish, rose-coloured, black, or brown. Captain Pogson mentions that the diamonds are classed as the motichal, which is clear and brilliant; the manik, of greenish hue; the punna, which is tinged with orange; and the bauspat, which is blackish. In his time, the mines chiefly worked were at Sakariya, about 12 miles from Punnah. The chief of Punnah is descended from Hardi Sah, a son of maharaja Chhator Sal. The revenue is estimated at five lakhs of rupees. A small and fluctuating revenue is also derived from the diamond mines.—*Imp. Gaz. vii.*

PUNSAVANA, on quickening, a domestic ceremony of the Hindus to secure the birth of a male child.

PUNSIRY, a weight for grain in the Nizam's territory, Hyderabad, of 5 seers (punch-sir), or 9 lbs. 14 oz. 12 drs.

PUNT. MAHR. A prefix to the titles of the eight great officers of the Mahratta State under the old regime, as Punt Pratinidhi. When it follows a name, it signifies a Brahman who is not a Sanskrit scholar, but is a clerk or accountant.

PUNYANI, a river of the Malabar coast. The western or Malabar Ghats extend nearly north and south from Kandesh to Cape Comorin, or from 21° to 8°, and form a nearly unbroken chain, except at the chasm, nearly 16 miles in breadth, which opens into the valley of Coimbatore, and through which the river Panyani escapes into the sea.—*Royle, Ill. Him. Bot. p. 6.*

PUN-YET or Poey-ne-yet, a resinous substance from Burma, produced as a nest by the Trigona keviceps, a hymenopterous insect, in the ground and hollow trees. Indeed, the cellular structure of the specimens much resembles that of a wasps' nest. Investigation into the origin of the dammers of the western coast shows that a species of bee appeared exceedingly fond of the liquid dammer of the Canarium; this insect lives in holes in the ground, and it will probably be found on inspection that its cells are composed of a similar substance to that now under consideration. See Insects; Resins.

PUPA. In entomology, this term is applied to the third stage of existence of an insect, the egg being the first stage, and the larva or caterpillar the second.

PUPALIA GENICULATA, the Niusih of the Chinese, has knotted roots; used medicinally.—*Smith.*

PUPUT. MALAY. Bellows made from the trunk of a large tree, hollowed out in the centre like a cylinder, into which a piston is inserted at each end. The piston is formed of a circular base of wood, with valves which fit into the cylinder of the bellows. In the centre of this circular base is fixed a long handle, by which it is worked. A piston being attached to each half of the cylinder, whilst one piston is drawing out another is being pushed in, and a constant stream of air kept up.—*Court, p. 233.*

PUR. HIND.; Pura, SANSK. A town, a city, a village, written pore, poor, pori; generally a suffix to other names, as Bijapur, Berhampore, Panderpoor; and in Carnatic, Madalain, Tamil, and Telugu changing r to l, and dropping the p for euphony, ur, ura, aura, oor, auri, uri, uru, uli, oli, aula, auli, ore, as Hastinapur, Avanoor, Tanjore, Trichinopoly, Maholi, Chacholi. It is the Greek polis and Celtic bal.

PUR. HIND. Literally full; a ceremony so called.

PURAD, a race in Amraoti.

PURALLI, a river of Baluchistan about 100 miles long. It rises in Jhalawan province, about lat. 27° 23' N., long. 66° 21' E., runs southerly through Lus province into the Indian Ocean, in lat. 25° 23' N., long. 66° 20' E.; near Sonmeani. From the bund N. of Lyari, the river has no bed. As it fills during the rains, the bund is swept away, and the water inundates the plain, which is here about five miles broad.

PURAN, a Christian religious book, written by Estava of the Society of Jesus, said to have been an Englishman named Stephens.—*Cust.*

PURANA, literally old, is the name given to some sacred books of the Hindus. They are eighteen in number, and these have been supplemented by eighteen Upa Puranas or appendices. The eighteen Puranas are—

Brahma.	Brahma Valvarta.
Padma.	Linga.
Vishnu.	Varaha.
Vayaviya.	Skanda.
Sri Bhagavata.	Vamana.
Narada or Naradiya.	Kurma.
Markanda or Markandeya.	Matsya.
Agni.	Garuda.
Bhavisya.	Brahmanda.

The names of the Upa Puranas are the Sanat-kumara, Nara-sinha or Nri-sinha, Naradiya or Vriben (old), Siva, Durvasasa, Kapila, Manava, Ausanasa, Varuna, Kalika, Samba, Nandi, Saura, Parasara, Aditya, Maheswar, Bhagavata, and Vasishtha. The Puranas are all in Sanskrit verse, and in the form of dialogue between an exponent and an inquirer. The total number of couplets in the entire eighteen is 400,000.

They are all sectarian in their expositions, some of them putting forward the Saiva doctrines, and others advocating the Vaishnava belief.

The Saiva sect claim 10 of the 18 Puranas; but Vishnu holds pre-eminence in the Vishnu, Naradiya, Bhagavata, Garuda, Padma, and Varaha Puranas. The Matsya, Kurma, Linga, Siva, Skanda, and Agni Puranas are devoted to Siva; the others, viz. Brahma, Brahmanda, Brahma Valivarta, Markandeya, Bhavisya, and Vamana, chiefly relate to Brahma, though none of these are exclusively devoted to one god.

The Puranas are also classed in three categories, viz. 6 Vaishnava or Sattva or pure Puranas, are the Vishnu, Naradiya, Bhagavata, Garuda, Padma, and Varaha; 6 Tamas or Saiva Puranas, in which the quality of gloom or ignorance predominates, are Matsya, Kurma, Linga, Siva, Skanda, and Agni; 6 in which rajas or passion prevails, Brahma, Brahmanda, Brahma Valivarta, Markandeya, Bhavisya, and Vamana.

Sectarian bitterness in many of them finds expression. In the last chapter of the Padma or Lotus Purana is a dialogue, in which it is stated that Siva is licentious, Brahma arrogant, and Vishnu alone pure and entitled to respect. They indicate the beliefs of the Hindus which followed on those of the Vedas, the Buddhists, and the Jains; but that of Siva has been supposed to be a revival of an ancient deity of Western Asia, and with that of Vishnu, as Krishna, some of the Christian doctrines are supposed to have been amalgamated.

It is believed that none of them are earlier than

the 6th or 8th century of the Christian era, and that they were composed by different authors between the 6th and 18th or 16th centuries. Professor Wilson thinks that the Vishnu Purana was composed about the middle of the 11th century after Christ, and that the Bhagavata Purana is later. The Brahma Purana, called 'Adi' or the first, has a reference to the temples of Jaganath in Orissa. No part of the Padma Purana is older than the 12th century, and the last parts may be as recent as the 15th or 16th century of the present era. The Vaya Purana is the oldest of them, and may date as far back as the 6th century, and it is claimed by some Saiva authorities as upholding the belief in Siva. The Vishnu is best known; the Markandeya is the least sectarian; Vishnu and his incarnations occupy the largest space; and the Bhagavata, which describes the incarnations of Vishnu, and particularly with his form as Krishna, is the most popular. It is, however, in the Bhagavata, or 18th of the Puranas or old books, in which Krishna is described in his complete apotheosis, and in that he is represented as the eighth avatar of Vishnu.

Colebrooke and Wilson ascribe the authorship of the *Srimat Bhagavata* to Bop-deva in the 13th century A.D., after the appearance of the Vishnu Purana. The native tradition is strongly against this hypothesis. Babu Rajendralal Mitra, a distinguished oriental scholar, in noticing the *Muktaphala*, says, 'This work and another lately found by me, in which the same author gives an abstract of the contents of the Bhagavata, afford strong presumptive evidence against the opinion now generally received by oriental scholars, that the Bhagavata was written by Bop-deva.' A much stronger proof, however, is afforded by the *Dana-sagara* of Ballala Sena, king of Bengal, in which the Bhagavata is repeatedly quoted. That work also quoted from the *Adi Purana*, which Wilson supposed was composed within the last three centuries. Bop-deva, according to Colebrooke and Wilson, flourished in the twelfth and thirteenth centuries; Ballala lived in the eleventh century.

Most of the Puranas contain portions of historical as well as geographical knowledge. Every Purana treats of five subjects,—the creation of the universe; its progress, and the renovation of worlds; the genealogy of gods and heroes; chronology, according to a fabulous system; and heroic history, containing the achievements of demigods and heroes. Since each Purana contains a cosmogony, both mythological and heroic history, they may not unaptly be compared to the Grecian theogonies. In the present state of Hindu belief the Puranas exercise a very general influence. Some of them, or portions of them, are publicly read and expounded by Brahmins to all classes of people. Most Brahmins who pretend to scholarship are acquainted with two or more of them; and particular sections, as the *Deva-Mahatmya*, are amongst the most popular works in the Sanskrit languages. Prayers from them have been copiously introduced into all the breviaries; observances of feasts and fasts are regulated by them; temples and towns, and mountains and rivers, to which pilgrimages are made, owe their sanctity to legends for which the Puranas or the *Mahatmyas*—works asserted, often untrue, to be sections of them—are the only

authorities, and texts quoted from them have validity in civil as well as religious law.

The Vishnu Purana is the most complete in the five distinguishing topics, Pancha-lakshana,—the creation of the universe, its destruction and renovation, the genealogy of gods and patriarchs, the reigns of the manus, forming the periods called Manwantaras, and the history of the Solar and Lunar races of kings. The other Puranas all deviate from these.

That the Puranas represent in many instances an older and probably a primitive scheme of Hinduism, is no doubt true: they have preserved many ancient legends, they have handed down all that the Hindus have of traditional history, and they furnish authoritative views of the essential institutions of the Hindus, both in their social and religious organization. But in their decided sectarian character, in their uncompromising advocacy of the pre-eminence of some one deity, or of some one of his manifestations, in the boldness with which they assert his pantheistic presence, in the importance they attach to particular observances, as fasting on the 8th, 11th, and 14th days of each half month, in the holiness with which they invest particular localities, in the tone and spirit of their prayers and hymns, and in the numerous and almost always frivolous and insipid and immoral legends which they have grafted upon the more fanciful, dignified, and significant inventions of antiquity, they betray most glaringly the purposes for which they were composed,—the dissemination of new articles of faith, the currency of new gods.

There seem good reasons to believe that the Puranas in their present form accompanied or succeeded a period of considerable religious ferment in India, and were designed to uphold and extend the doctrines of rival sects, which then disputed the exclusive direction of the faith of the Hindus. It began, perhaps, in the 3d or 4th century of the Christian era, having for its object the extermination of the Buddhists, who were thus driven out of India to Ceylon, Siam, Java, China, and Tibet. When the Buddhists, whom all parties considered heterodox, were expelled, their enemies began to dispute amongst themselves. In the 8th or 9th century, a reformer named Sankaracharya is celebrated for having refuted and suppressed a variety of opposing professors, and established the preferential worship of Siva. He instituted in support of his doctrines an order of ascetic mendicants which still subsists, and he is in an especial manner regarded as the founder of a system of belief adhered to by Brahmans of learning, particularly in the south of India. The triumph that he obtained for the deity he exclusively upheld did not long survive him. Early in the 11th century, Ramanuja, a follower of Vishnu, set up that divinity, not only for the belief of the people, but for the more substantial benefits of temples and endowments. Tradition records that the great temple of Triveni, one of the largest and richest in the Peninsula, now dedicated to Vishnu, was wrested from the rival votaries of Siva by Ramanuja and his followers. The ascendancy of the Vaishnava was not undisputed in the south, and a new Saiva sect, the Lingayites, sprang up in opposition to them; the contest was carried on with popular violence, and in one of the disturbances that ensued, the raja of

Kalyan was killed and his capital destroyed. The Muhammadan invasion of the south crushed both the contending parties, and the predominance of the same power in Upper India prevented the like violence of collision. The Vaishnava belief there spread with little resistance under the followers of Ramanand, a disciple of Ramanuja, to whom or to whose pupils the greater proportion of the mendicant orders in Hindustan owe their origin, and under two Brahmanical families, one in the west sprung from a teacher named Vallabha, who established themselves as hereditary priests of the juvenile Krishna, and one in Bengal and Orissa, descended from Nityanand and Adwaitanand, two disciples of Chaitanya, a teacher with whom the popularity of the worship of Jagannath originated. A particular description of all the different divisions of the popular religion of the Hindus may be found in the 16th and 17th volumes of the Asiatic Researches.

These different religious orders and families are now almost exclusively the spiritual directors of the Hindus. Some of them are rich and of Brahmanical descent; some are poor, and composed of persons of all castes. They are almost all, whether rich or poor, illiterate, and several of them are profligate. Such literature as they occasionally cultivate—and it is one of the means by which they act upon the people—is vernacular literature, compositions in the spoken languages. These are mostly songs and hymns addressed to Vishnu, Krishna, or Radha; tales and legends of individuals celebrated amongst them as saints, always marvellous, mostly absurd, and not unfrequently immoral; and vague and dogmatical expositions of elements of belief, which, although in some degree discoverable in the Puranas, have assumed novel and portentous prominence in the doctrines of the Vaishnava teachers and the practices of the people. These elements are passionate devotion and all-sufficient faith.

According to the geography of the Puranas, the earth consists of a series of central circles and six other annular continents, separated from each other by as many oceans of different fluid substances.

The Puranas do not afford any reliable information as to the state of the early occupants of India. The account which these books contain of the periods, dynasties, races, genealogies, and kings of Vedic India, looks imposing, minute, and circumstantial. They describe two great dynasties of the sun and moon, branching off into separate kingdoms; four great ages of the world, with an accurately defined list of kings for each, and these lists all so framed as in appearance to strengthen and support each other. Containing also the very names found in the Vedas, with an elaborate system of dynastic change, and of intermarriages. But the Hindu of the middle ages had an immoderate speculative-ness, a love of wild extravagance, fiction, and untruth. Colebrooke tells us (ii. p. 100) that the Raghiva-Pandivegam, an extraordinary poem by Kaviraj, is composed with studied ambiguity, so that it may at the option of the reader be interpreted as relating to the history of Rama and other descendants of Dasaratha, or that of Yudisthra and other sons of Pandu. It tells, in short, two distinct stories in the same words, as the following sentence will show:—

Succeeding in youth to the kingdom of his variously valiant father, who departed for heaven, he dwelt happily in the city of Ayodhya, which was adorned with elephants, and upheld the prosperity of his realm.

Succeeding in youth to the kingdom of his father Vichitravirya, he dwelt happily in the peaceful city of Hastinapura, auspiciously inhabited by Dhriti Rashtra.

Writers with such perverted imaginations issued the yogas and genealogies of the Puranas, the little leaven of truth in some of them being the names of a few Vedic kings, interspersed apparently at haphazard. The writer of the Vishnu Purana, in such a simple matter as writing out a list of rivers, puts down all he can remember, some twice over, and then adds to it the names of about a dozen rishis, taken bodily from the Vedas. The Puranas have not only added nothing to our stock of knowledge as to the state of ancient India, but have done much to retard research. For, partly from the skill and elaborateness of the fiction, and partly from the mutual support which the Puranic writers gave each other,—astronomy, poetry, legend, chronology, and history all helping on the deceit,—modern scholars received the dynasties and the historical eras of two or perhaps three of the yogas as having some reality. But the Rig Veda does not contain many of the Puranic names, nor even an allusion to them. It makes no mention of Solar or Lunar races. It knows nothing, and indeed can know nothing, of Ayodhya, and Kusi, and Mithila, and Vesali, and Magadha, or even of Indraprastha; while the Puranas, on the other hand, know nothing of dynasties in the Panjab or on the Indus.

The best known is the Vishnu Purana, which is referred to the 11th century by Professor Wilson. The Puranas have been thought by some to represent Egypt as the theatre of action, and the wars related of Brahma, Siva, and Vishnu to be the legend of the wars between Osiris, Horus, and Typhon; for Brahma, in his character of all-destroying time, corresponds with Typhon; Mahadeva or Siva, that of the productive principle, with Horus or Hara, who assumes each of his characters on various occasions either to restore the powers or to subdue the opponents of Vishnu, or active nature, from whom his auxiliary springs.—*Wilson's Hind. Theat.* ii. p. 58; *Wilson's Religious Practices and Opinions of the Hindus*, p. 24; *Calcutta Review*, No. 109, p. 52; *As. Res.* iii. p. 375; *Coleman*; *Moor*, p. 441; *Colebrooke's Sanskrit and Prakrit Languages*, *As. Res.* vii. p. 202; *Tot's Rajasthan*, i. p. 20.

PURANADHISTHANA, the old capital of Kashmir, the present Pandrethan. It possessed a tomb of Buddha.

PURANDHAR, a mountain, a town, and subdivision of the Poona collectorate of Bombay, in lat. 18° 16' 33" N., and long. 74° 0' 45" E., 16 miles south of Poona city. The highest point of the mountain of Purandhar is upwards of 1700 feet above the plain. Purandhar was one of the first places which the Mahratta chief Sivaji brought under his possession by practising on the fears of its defenders.—*Imp. Gaz.*

PURAN-JAYA, a prince of the Solar race, son of Vikukshi, in the Treta age. With the aid of Indra, he took the city of the Daitya, situated in the west, and overthrew the enemies of the gods.—*Dowson*.

PURBHARA HAC. MAHR. Fees or remuneration received by village officials in the Ahmadnagpur collectorate, in addition to what they receive from Government; Purbhara meaning intermediate or indirect.

PURBIA. SANSK. A term applied to the natives of the eastern countries of India, or those lying in the east of the Ganges, beginning from Behar. At the commencement of the revolt of 1857, the Purbia of Oudh and Hindustan in general constituted three-fourths of the regular army of Bengal, and all of them, from community of country, although of different races, castes, and religions, had so strongly united together, that the army had become quite a close service, open only to the few favoured classes. The strength of this feeling only became known when the Government tried and failed to introduce 200 Sikhs into each regiment of the line. Purbia literally means a man from the east of the Ganges, from Oudh and Behar, from which districts the mass of the troops of the Bengal army, before the mutiny of 1857, were drawn.

PURCHAS. The Reverend Samuel Purchas abridged and published the voyages of the early navigators to India under the title, *His Pilgrimes and Pilgrimage*, 5 vols. fol., London 1624-26. He died A.D. 1626. He edited the journals of the first twenty voyages of the English E. I. Co.

PURI. HIND. A yellow pigment produced from the urine of the horned cattle fed on mango leaves. The urine of the elephant is also said to be a chief ingredient. It is brought to China in round lumps of various sizes, in colour like orpiment, with a strong urinous smell, and little or no taste.—*Morrison*.

PURI, a town in Orissa, which gives its name to a revenue district of Bengal, lying between lat. 19° 27' 40" and 20° 16' 20" N., and long. 85° 0' 26" and 86° 28' E., with an area of 2472 square miles, and a population (in 1872) of 769,674 souls. The town of Puri is commonly known as Jaganath. It is situated on the coast, in lat. 19° 48' 17" N., and long. 85° 51' 39" E., being separated from the sea by low sandy ridges. In 1872 its population was 22,695. Puri, built upon its extreme south-eastern shore, and protected on the one side by the surf, and on the other by swamps and inundations, is the corner of Orissa which has been most left to itself, and Hindu religion and Hindu superstition have there stood at bay for eighteen centuries against the world. In the courts of Jaganath, and outside the Lion Gate, 100,000 pilgrims every year partake of the prasada, food offered to the idols.

Antiquaries are agreed that Puri was an ancient seat of Buddhism, and that some relics of the old cultus have descended upon the comparatively modern Hindu deity Jaganath, 'the lord of the world.' Jaganath is only a later form of Krishna, who was an incarnation of Vishnu. Once a year the idol and its two companions are dragged about on huge cars. No less than 4200 men enjoy rent-free lands upon condition of performing this service. Thousands of pilgrims eagerly lend their aid. In the vast multitudes assembled on these occasions, accidents happen, as in all tumultuous gatherings. Mr. Stirling witnessed the festival on four occasions, and only three cases of self-immolation occurred in them all; one of these cases was doubtful, and the other two victims

PURI.

had long suffered from excruciating disorders. Another European, long resident in Puri, adds his testimony that 'the excess of fanaticism, which is stated in several missionary accounts to prompt pilgrims to court death by throwing themselves in crowds under the wheels of the car of Jagannath, has never existed or has long ceased.' Mr. Ferguson, who visited Puri in 1838, saw 'the pilgrims hurrying to the spot, talking and laughing like people going to a fair in England, which in fact it is;' but he found nothing to justify the highly-wrought picture of 'the hundreds of dead and dying pilgrims that strewed the road, and of their bones that whiten the plains.' He saw no victims crushed under the wheels, and 'none had been heard of for many years before that time.' The character of the idol is entirely averse to sanguinary sacrifices of every kind.

PURI. KARN. A grain store.

PURIFICATION, with the ancient Hebrews (Leviticus xi.-xv.), with the Hindus, and with the Muhammadans, has been a religious rite. Hindus and Muhammadans follow the Jews in their attention to outward purity. With Muhammadans, before praying, it is necessary that he be undefiled. There are degrees of defilement, the least of which requires that the hands, arms, and feet be washed before praying, and for this purpose mosques are always provided with cisterns or tanks of water; in the desert, sand is used. After greater impurities, it is necessary that the whole body be washed, hence the longer they remain undefiled the purer their life. Wazzu expresses the ablution, and Hedas the state of defilement, during the continuance of which they cannot pray. The Mulana Abu Asbah was said to use the water of purification twice in a month; that is, his life was so pure, that for a whole fortnight he was not so much defiled as to make necessary a total ablution. Vir præcipue emissionem seminis foedatur at mulier menstruum. Amongst the Brahmans, sipping water is a part of the ceremony of purification. In the Mitakshara, on the subject of personal purification, the direction is, 'Let the twice-born man (after evacuations) always perform the upasparsa;' i.e., says the commentator, 'let him sip water.' According to Professor Wilson, the sense of the passage in Book vii. 4 is, 'that Nala sat down to evening prayer (as Menu directs, "he who repeats it sitting at evening twilight," etc.), after performing his purifications and sipping water, but without having washed his feet; such ablution being necessary, not because they had been soiled, but because such an act is also part of the rite of purification.'

A Hindu becomes unclean by various acts and circumstances, during which he is interdicted almost every religious ceremony, and forbidden to shave or cut his nails. In the act of purification the person shaves his head, bathes, and puts on clean apparel.

The customs of the Jews, as described in Mark vii. 3, 4, well illustrate the practice of the modern Hindus: 'Except they wash their hands oft, eat not. . . . And many other things there be, . . . as the washing of cups and pots, brazen vessels, and of tables.'

A Hindu becomes unclean after the death of persons related to him by blood. If a child die before it has teeth, the family bathe immediately, and become clean; or if a child die before its ears

PUROHITA.

are bored, the family remain unclean one night. If a woman miscarry, the family become impure ten days. After a birth, all the members of the family in a direct line become unclean. A woman in her periods is unclean for three days; but on the fifth day, after bathing, she may again perform religious ceremonies. Every person is considered as in some measure unclean while in a state of sickness, and from some religious services a sick person is wholly excluded. A Brahman becomes unclean by the touch of a Sudra, a dog, a Muhammadan, a barbarian, etc.; and all castes, by touching a woman in her courses, a dead body, ordure, urine, the food of castes, etc.—*Ward's Hindoos*, ii. p. 147; *Journ. Ind. Arch.* v. No. 11; *Williams' Story of Nala*.

PURIHARA, one of the four Agnicula tribes. The Purihara, or Pritihara, are scattered over Rajasthan, but do not seem to have any independent chieftainship there. At the confluence of the Kohari, the Sind, and the Chambal, there is a colony of this race, which has given its name to a commune of 24 villages, besides hamlets, situated amidst the ravines of these streams. Mundawur (classically Mundodri) was the capital of the Purihara, and was the chief city of Marwar, which owned the sway of this tribe prior to the invasion and settlement of the Rahtor clan. The Purihara is the least of the Agnicula. They never acted a conspicuous part in the history of Rajasthan.—*Tod*, i. p. 106. See Agni; Agnicula.

PURLA KIMEDY, a district in the hill tracts of Orissa.

PURLU, a substance used in dyeing black, with 'pasuta' (alum and sulphate of iron) as the mordant.—*Powell*, i. p. 453.

PURNAH, a tributary to the Tapti river. It rises in lat. 21° 35' N. and long. 77° 41' E., runs S. 65 miles, W. 25 miles into the Tapti; length, 160 miles.

PURNIAH, a town in Bengal, situated on the east bank of the Saura river, in lat. 25° 46' 15" N., and long. 87° 30' 44" E. Population (1872), 16,057. It gives its name to a district lying between lat. 25° 15' and 26° 35' N., and long. 87° 1' and 88° 35' E. Area, 4957 square miles; population (1872), 1,714,795. It is bounded on the north by the state of Nepal and Darjiling district; on the east by the districts of Jalpaiguri, Dinajpur, and Malah; on the south by the river Ganges. Eastwards, the mass of the people are aborigines, being an outlying portion of the Koch or Kiranti race.—*Imp. Gaz.*

PURNIMA. SANSK. Full moon; softened into Punam.

PUROCHNA, in Hindu tradition, an emissary of Duryodhana, who failed in an attempt to burn the Pandava in their house, and was burned in his own house by Bhima.—*Douson*.

PUROHITA or Purohit, a family priest of the Hindus of N. India, who conducts all ceremonials at births, marriages, and funerals, and other solemn occasions. They are usually Brahmans, and also are astrologers. The name is Sanskrit, from Puras, to go before, and Hita, good. Every Brahman may perform the ceremonies of his religion. The priest, called a Purohita, is, however, called in to assist in the Srad'ha, the ten ceremonies called Sungskaru, and in those at the offering of a temple.—*Ward's Hindoos*, ii. p. 15.

PURPARUL, a close-grained wood from the Santal jungles, esteemed equal to box.

PUR-PATI. SANSK. In ancient India, a village head-man.

PURSH, the standard measure of the Rajputana desert, is from 6 to 7 feet, or the average height of a man to the tip of his finger, the hand being raised vertically over the head. It is derived from Purusha, man.—*Tod's Rajasthan*, ii. p. 307.

PURTUN. MAHR. A moderate-sized field, of convenient length.

PURU, the sixth king of the Lunar race. He was the youngest son of Yayati and Sarmishtha. He and his brother Yadu were founders of the two great branches of the Lunar race. The descendants of Puru were called the Paurava, and of this race came the Kaurava and the Pandava. Among the Yadava or descendants of Yayati was Krishna. In the time of Alexander there were two princely races belonging to the Puru or Paurava, both called Porus by the Greeks. When the Aryans had advanced southwards, and large portions of what is now termed India were under their sway, we read of one monarch with many names,—Divo Dasa, Atithigwa, Aswateha, Prastoka, Srinjaga, and Puru. Three of these are found in one verse (vol. ii. p. 34): 'For Puru, the giver of offerings, for the mighty Divo Dasa, through Indra, has destroyed ninety cities. For Atithigwa the fierce (Indra) hurled Sambara from off the mountain, bestowing (upon the prince) immense treasure.' Divo Dasa was a warrior and a conqueror; he is described as overcoming and destroying many cities of Sambara, reserving one for his own use. He made a successful expedition as far as Parnaya (Query, the modern Purnia?). In his old age, at the head of a confederacy of twenty kings, Kusta and Ayu being the chief, he led an army of 60,000 against the mighty and youthful Sa-sravas, was defeated, and compelled to submit. And a writer in the *Calcutta Review* (No. 64, p. 432) views this war to be the historical foundation for the traditional great war of the Mahabharata. The era of Divo Dasa is estimated to have been about the time of Cyrus, and the engagement described to have been with some satrap (kshatrap) left by Cyrus when he was occupied with his great Median, Lydian, or Babylonian campaigns. It may, however, have been during the rebellions and troubles of the early days of Darius Hystaspes. And by a curious coincidence, Bentley places Garga (the bard of Divo Dasa) in B.C. 648, and the cautious Professor Wilson suspects an allusion to the Buddhists, which could not be earlier than B.C. 545. The Puru kingdom, according to Bunsen, was established B.C. 3000 by the Aryan immigrants, who afterwards made conquests of Matmaru, Tansu, and Iliya.—*Bunsen*, iv. p. 556; *Dowson*.

PURUDKUL or Pattadkal has a great temple covered with inscriptions, and is supposed to be of the 8th or 9th century. Its plan is almost that of the Kailas temple at Ellora.—*Fergusson*.

PURUM. HIND. of Dharwar. Narrow strips of coarse cotton cloths of various kinds sewn together, and used as curtains for the front of shops and houses, and also as tents to protect goods on transit. This is made of the waste warp-ends of pieces of cotton cloth joined together. Purum,

another description, is used more for making bags, etc.—*W. C. Anderson of Dharwar*.

PURU-RAVAS, a mythical person, noticed in the Rig Veda as son of Ila, and a beneficent and pious prince. But the Mahabharata says he was son of Budha by Ila or Sudyumna, daughter of Menu, and grandson of the Moon. He is also called Aila, Lailan Shah, Ninus, and Nilan. He is the hero of the story in the drama of Vikrama and Urvashi, or the Hero and the Nymph. Puru-Ravas is always called a Rajarshi (Raja Rishi or royal saint). In the classification of sages, there are three orders,—the Rajarishi or kingly sage, such as Janaka; the Brahmarishi or Brahman sage, as Vasishtha; and the Devarishi or divine sage, as Nareda.—*Hind. Theat.* p. 201; *The Hero and the Nymph*; *Dowson*; *As. Res.* viii. p. 256.

PURUSHA. SANSK. Man, mind; the male deity, a title of Narayana, the Supreme Being and soul of the universe; every male said to have sprung from him. Purusha-med'ha, sacrifice of a man, human sacrifice.

Purusha-sakta is a hymn in the Rig Veda in which the four castes are first mentioned, but is regarded by Sanskrit scholars as of late introduction. In it occurs the passage descriptive of the origin of Brahmans from Brahma: the Brahman was his mouth; the Rajanya was made his arms; the being (called) the Vaisya, he was his thighs; the Sudra sprang from his feet. Ver. 7 says, This victim Purusha, born primevally, they immolated on the sacrificial grass; with him as their oblation, the gods, Sadhyas and Rishis, sacrificed. 8. From that universal oblation were produced curds and clarified butter. He produced the animals, of which Vayu is the deity, both wild and tame. 9. From that universal sacrifice were produced the hymns called Rich and Saman, the Metres, and the Yajus. 10. From that were produced horses, and all animals having two rows of teeth, cows, goats, and sheep. 11. When (or offered up) Purusha, into how many parts did they divide him? What was his mouth? What were his arms? What were called his eyes and feet? 12. The Brahman was his mouth, the Rajanya was made his arms, that which was the Vaisya was his thighs, the Sudra sprang from his feet. 13. The moon was produced from his mind (Manas), the sun from his eye, Sudra and Agni from his mouth, and Vaya from his breath. 14. From his name came the atmosphere, from his head the sky, from his feet the earth, from his ear the four quarters, so they formed the worlds. The comparatively late date of this hymn is evident from the mention of the Saman and Yajus Veda (ver. 9), but it is older than other accounts which are given us in Menu and the Mahabharata, when the mystical significance of the story disappears, and the castes are represented as literally proceeding from Brahma's body. Even when this origin of the castes had been received, and the supremacy of the Brahmans established, it was still considered possible to rise by means of mortification from the Kshatriya to the Brahmanical caste; and there have been also many instances of masses of the people being created Brahmans.—*As. Res.* iii. 358, xvii. 214.

PURUSHOTTAMA, literally best of men, a title of Vishnu as the Supreme God; also a name of Krishna as Vishnu. Purushottama-kshetra, the sacred territory round about the temple of

Jaganath in Orissa.—*As. Res.* iv. p. 364; *Dowson*.

PURVO, a class of Hindus in Bombay, almost exclusively employed as clerks and copyists. These, according to Colonel Tod, are descendants of the ancient Guebre. The Purvoe (Prabhu) of the north-west of the Peninsula of India is a clerking caste, who claim to be descendants of Chandra Sena, a raja of Malabar. Brahmans deny this claim, and assert that they are of menial origin. Maha Prabahu, softened into Maha-prahu, is a respectful form of address.—*Wils. Glossary*.

PUSHAN, a deity frequently mentioned in the Vedas, and supposed to represent Surya, the sun. He is the protector and multiplier of cattle and of human possessions in general.—*Dowson*.

PUSHKALAVATI or Peukelaotis, Pukkalaoti, Pukkala, stupa of the 'eyes gift.' According to General Cunningham, the ancient capital of Ghandara was Pushkalavati or Peukelaotis, which is said to have been founded by Pushkara, the son of Bharata, and the nephew of Rama. Its antiquity is undoubted, as it was the capital of the province at the time of Alexander's expedition. The Greek name of Peukelaotis or Peucolaitis was immediately derived from Pukkalaoti, which is the Pali or spoken form of the Sanskrit Pushkalavati. It is also called Peukelas by Arrian, and the people are named Peukalai by Dionysius Periegeti, which are both close transcripts of the Pali Pukkala. The form of Proklais, which is found in Arrian's Periplus of the Erythraean Sea, and also in Ptolemy's Geography, is perhaps only an attempt to give the Hindi name of Pokhar instead of the Sanskrit Pushkara. According to Arrian, Peukelas was a very large and populous city, seated not far from the river Indus. It was the capital of a chief named Astes, perhaps Hasti, who was killed in the defence of one of his strongholds, after a siege of thirty days, by Hephæstion. Upon the death of Astes, the city of Peukelaotis was delivered up to Alexander on his march towards the Indus. Its position is vaguely described by Strabo and Arrian as 'near the Indus.' But the geographer Ptolemy is more exact, as he fixes it on the eastern bank of the river of Susatene, that is, the Panjkora or Swat river, which is the very locality indicated by Hiwen Thsang. The river here mentioned is the Kophes, or river of Kābul; and the bearing and distance from Peshawur point to the two large towns of Parang and Charsada, which form part of the well-known Hashtnagar, or 'Eight Cities,' that are seated close together on the eastern bank of the lower Swat river. These towns are Tangi, Shirpao, Umrzai, Turangzai, Usmanzai, Rajur, Charsada, and Parang. They extend over a distance of 15 miles; but the last two are seated close together in a bend of the river, and might originally have been portions of one large town. The fort of Hissar stands on a mound above the ruins of the old town of Hashtnagar, which General Cunningham places on an island nearly opposite Rajur. 'All the suburbs,' he says, 'are scattered over with vast ruins.' It seems to General Cunningham not improbable that the modern name of Hashtnagar may be only a slight alteration of Hastinagara or 'city of Hasti,' which might have been applied to the capital of Astes, the prince of Peukelaotis. It was a common practice of the Greeks to call the Indian cities by the names of their cities, as Taxiles,

Assakanus, and others. It was also a prevailing custom amongst Indian princes to designate any additions or alterations made to their capitals by their own names. Of this last custom we have a notable instance in the famous city of Delhi, which, besides its ancient appellations of Indraprastha and Dilli, was also known by the names of its successive aggrandizers as Kot-Pithora, Kila-Alai, Tughlakabad, Firozabad, and Shahjahanabad. It is true that the people themselves refer the name of Hashtnagar to the 'eight towns,' which are now seated close together along the lower course of the Swat river; but it seems to General Cunningham very probable that in this case the wish was father to the thought, and that the original name of Hastnagar, or whatever it may have been, was slightly twisted to Hashtnagar, to give it a plausible meaning amongst a Persianized Muhammadan population, to whom the Sanskrit Hastinagara was unintelligible. To the same cause he would attribute the slight change made in the name of Nagarahara, which the people now call Nang-nihar, or the 'Nine Streams.' In later times, Pushkalavati was famous for a large stupa, or solid tower, which was erected on the spot where Buddha was said to have made an alms-offering of his eyes. In the period of Hiwen Thsang's visit it was asserted that the 'eyes gift' had been made one thousand different times in as many previous existences; but only a single gift is mentioned by the two earlier pilgrims, Fa Hian in the 5th century, and Sung-Yun in the 6th century.—*Cunningham's Ancient Geography*, pp. 49-51.

PUSHKARA, a town and celebrated tank and place of pilgrimage, 5 miles from Ajmir in Mhairwara, in lat. 26° 30' N., and long. 74° 40' E. In Hindu legend, Brahma here performed the sacrifice known as Yajna, whereby the lake of Pushkara became so holy that the greatest sinner by bathing in it earns the delights of paradise. It has five temples, all modern, and dedicated to Brahma, Savitri, Badri, Narayana, Varaha, and Siva Atmat-ewara. Bathing ghats line the lake, and most of the princely families of Rajputana have houses round the margin. No living thing may be put to death within the limits of the town. Great fairs in October and November are attended by about 100,000 pilgrims, who bathe in the sacred lake. Large trade at that time in horses, camels, bullocks, and miscellaneous merchandise. Permanent population about 3750, chiefly Brahmans.—*As. Res.* xi. p. 121; *Imp. Gaz.*

PUSHKARAM. This Hindu feast only occurs every twelve years, takes place in Rajamundry, and lasts during twelve days. Its chief ceremonies consist in bathing. The Godavery is a sacred river, and is the delight of all Hindus, who come to bathe in it from places so far distant as Balasore, Calcutta, and even the holy city of Benares.

PUSHKARAS, the British Islands and Iceland so called.—*As. Res.* xi. p. 105.

PUSHKARA SHANTEE. SANSK. From Pushkara, the evil fortune attending a person who shall die when an unlucky day, an unlucky lunar day, and an evil planet all unite, and Shantee, to pacify or produce peace.

PUSHKARAVATI, an ancient city of the Gandharas, not far from the Indus. It is the *Peukelaotis* of Ptolemy, and the *Pouskeliofati* of Hiwen Thsang.—*Dowson*.

PUSHPA-MITRA, the first of the Sunga kings who succeeded the Maurya, and reigned at Pataliputra. The grammarian Patanjali is supposed to have lived in his reign.—*Dousson*; *Fergusson* and *Burgess*. See *Magadha*; *Sunga*.

PUSHT. BALUCHI, PUSHTU. A plateau.

PUSHTU. The term Afghan is applied to a multitude of tribes speaking the same dialect, the Pushtu or Afghani, but the word itself has no certain signification, and is borne by many people of very different origin, though the people are said to call themselves Pushtun. According to Captain Raverty, the people who dwell about Kabul and Kandahar, Sharawak and Pishin, are designated Br-Pushtun or Afghans; and those occupying the district of Roh, which is near India, are called Lr-Pukhtun or Lower Afghans. Persian is the official language of Afghanistan, but the Pushtu is alike the common tongue of the uneducated people and of the dwellings of the Amir. There are said to be two divisions of the Afghans, termed Pushtun and Pukhtun, who speak Pushtu and Pukhtu respectively; the Pushtu being the western dialect, with affinity to Persian, and the Pukhtu the eastern, with many Sanskrit and Hindi words. The Pushtu is spoken, with slight variation in orthography and pronunciation, from the valley of Pishin, south of Kandahar, to Kafiristan on the north; and from the banks of Helmand on the west, to the Attock, Sindhu or Indus river, on the east, throughout the mountainous districts of Bajawar, Banjhkora, Swat, and Buner, to Astor, on the borders of Little Tibet, a tract of country equal in extent to the entire Spanish peninsula. Also, throughout the British districts of the Dehrajat, Banu, Tak, Kohat, Peshawur, and the Sana or plain of the Yusufzai, with the exception of Dehra Ghazi Khan, nine-tenths of the people speak the Afghan language. Since the invasions of Mahmud of Ghazni in the 11th century, there has been a constant influx into India of Afghans as conquerors and settlers, and this has been so great from particular districts, that some tribes have altogether disappeared from Afghanistan. In some localities in India, the Afghan settlers are said to have preserved the Pushtu almost in its purity up to the present day, having from the outset married amongst themselves. In some parts of Bundelkhand, and in the territory of the Nawab of Rampur, whole towns and villages may be found in which the Afghan language is still almost exclusively spoken, and is the medium of general communication. Captain Raverty considers that although in numerous points the Pushtu bears a great similarity to the Semitic and Iranian languages, it is totally different in construction, and in idiom also, from any of the Indo-Sanskrit dialects. Persian is met with all over Afghanistan; the great families speak it, and their correspondence is carried on in that tongue; the people are acquainted with it, but they prefer speaking the Pushtu, the language of their tribes. They have a few works in this language, but they read Persian authors by preference, and have through them formed imperfect ideas of geography, astronomy, medicine, and history; but these works, full of fictions and deficiencies, have not materially assisted in developing their faculties.—*Raverty's Afghan Language*; *Ferrier's Hist. of Afghans*, p. 290.

PUSILAWA, a valley in Ceylon, overhung on

its south-eastern side by a chain of wooded hills, the last of which, Munera-galla, rises upwards of 4000 feet above the level of the sea, and commands a prospect of indescribable beauty and magnificence, embracing far and wide, mountains, forests, rivers, cataracts, and plains.—*Tennent*.

PUSK OIAY, palm leaves on which, in Ceylon, books are written.

PUSPUTNATH. The Bhagmutty is here crossed by two narrow Chinese-looking bridges, resembling those on the willow-pattern plates. It is at this sacred spot that devout Hindus wish to die with their feet in the water. Here it is that the bodies of the great are burned. Martabar Singh was reduced to ashes at the end of the bridge; and so was the rani, together with two favourite female slaves, whose society she did not wish to relinquish.—*Oliphant's Journey*, pp. 75, 77.

PUSPUTTY, qu. Pusapati, the family name of the maharaja of Vizianagram, near Vizagapatam, and perhaps was also that of Seetaram Raz.

PUT. SIND. Level places on the banks of the Hubb river, on which the Chuta tribe encamp; any level space traversed by a river.

PUT. SANSK. In Hinduism, a hell to which childless men are condemned. Putra, hell-saver.—*Dousson*.

PU-TA-LA, or great temple, near Zhe-hol, in Tartary. Smaller buildings surround this large fabric, the habitations of the priests or lamas, about 800 of whom are attached to this temple.—*Baron Macartney's Embassy*, i. p. 27.

PUTEI, a boat of the Ganges. See *Boats*.

PUTERA. **SIND**. Typha elephantina, *Roxb*. The leaves are employed for making mats and baskets.

PUTHA, Pakhta, a mat grass.

PUTHEN or Puther, a title of the five artisan classes of the south of India; also, in Travancore, a title of Tamil Brahmans, called also Bhutter.

PUTKA or Patka. **HIND**. A cloth worn as a kamrband or waist-band.

PUTRA. **HIND**. A son. Su-put, **HIND**, means 'worthy,' or 'good issue' (putra). The old Hindu law recognises twelve objects of affiliation.

PUTRANJIVA ROXBURGHII. *Wall*.

Nageia putranjiva, Roxb., Rh.

Wild olive, . . .	ENG.	Karupale, . . .	TAM.
Jiya putra, . . .	HIND.	Kuduru jivi, . . .	TEL.
Pongolam, . . .	MALEAL.	Kudura juvi, . . .	"
Putra-jan, . . .	PANJ.	Putra jivi, Yarala, . . .	"
Putrajiwa, . . .	SANSK.	Mahaputrjivi, . . .	"

An ornamental tree growing all over India, from the Himalaya to Ceylon. It is a large timber tree, with an erect-growing trunk, and a large spreading, shady head, composed of innumerable expanding branches, with bifurcous branchlets. Flowering time March and April, and the fruit ripening in January. Wood white, close-grained, and very hard. The Sanskrit name is compounded of Putra, a son, and Jiwa, life. The Hindustani name, Jiya putra, is similarly derived. The nuts are strung by parents round the necks of their children as charms to keep them in health, and are extensively sold in the bazars of Upper India.—*Roxb.*; *Royle's Ill.*; *Powell*; *Beddome*; *O'Sh.* p. 611; *Rohde's MSS.*; *Dr. Stewart*, p. 150.

PUTROTSAVAM. On the birth of a Brahman child, the ceremony called Putrotsavam is performed, and on the occasion the father presents sugar and sugar-candy to relatives and friends.

On the 11th day, the mother is anointed with the oil of the oriental sesamum. On the same day (11th), Punyahavachanam, or the purification rite for the mother and house, is performed. It is then that the child receives its name,—that of some one of its grand or great-grand-parents,—by the father writing it three times, with a golden ring, in unhusked rice, spread on a plate. This naming is called Namakaranam, and is followed by the guests bestowing blessings on the young one, as they scatter rice, coloured with turmeric, over it and the mother, who are seated in the midst of the assembly. The father then distributes money to the poor, and entertains relatives and friends. On this night, for the first time, the child is put into the cradle by the female guests, some of whom sing religious songs, while others rock the little one, and at the close the assembly are dismissed, after being presented with betel-nut, plantains, and boiled pigeon-pea, *Cajanus indicus*. The birth of a girl is less a source of rejoicing, because of that part of the Hindu creed which lays down that parents and other ancestors attain Swargalocum or Indra's heaven through a son's efforts.

PUTTEN, a Cochín-Chinese coin of the value of ten pice (4d.), which has recently become the general circulating medium, available for all ordinary purposes. Eighteen putten and six pice should go to the rupee, but it varies two or three pice, according to local circumstances.—*Simmonds' Dict.*

PUTTI or Poodi. TEL. A measure of capacity equal to 20 tum, and containing 14,941·653 cubic inches, the same as the khandi or candy. In the Northern Circars, the putti consists of 3635·413 cubic inches.

PUTTU, a Rajput sovereign who perished in the defence of Chitore; he was only sixteen years of age, and had lately married. To check any compunctious reluctance that he might feel in leaving his wife behind, his heroic mother armed the young wife as well as herself, and with her descended the rock, and the defenders of Chitore saw her fall fighting by the side of her Amazonian mother.—*Tr. of Hind. ii. p. 381.*

PUTTUA or Juanga, a forest tribe inhabiting the Tributary Mahals of Cutack to the south of Singbhum, in the mahals or killahs of Keonjur, Pal Leyra, Dhekenal, and Hindole. They are said to number 1500 persons of all ages, and to occupy fifteen different localities, thirty villages in Keonjur, and six or seven in Pal Leyra and Hindole. Their stature is diminutive,—men 5 feet 2 inches, women 4 feet 3 inches or 4 inches. The men dress like peasantry of the country; the women, however, only covered their persons in front and behind by a bunch of twigs with the leaves attached, kept up by a strip of bark or a string of beads. These leaves were changed daily. About the year 1871, the magistrate of the district distributed cloths among the women, and induced them to discontinue the leaf-covering. *Putta*, in Hindi, means a leaf. Their pursuits are chiefly those of the chase, in which they employ dogs and the bow and arrow.—*Ben. As. Journ. No. 4 of 1856; Dalton's Ethnology of Bengal.*

PUTU. SINGH. A dish made by the Singhalese of a *ferina* made from the young shoots of the palmyra palm, scraped coconut, and unripe jack-fruit, and steamed over a boiler.—*Simmonds' Dict.*

PU-TU ISLAND, about 40 miles from Chusan, is inhabited solely by celibate priests; no woman resides on the island, which is covered with temples of all descriptions, many of them very handsome, but one in particular, which was built by an emperor of China. The island is not large, and is laid out like a vast garden, with squares and walks, bridges, etc.—*Murray's Archipelago*, p. 151.

PUTWURDHUN, a powerful family of Mahratta Brahmana, with estates near Kolhapur.

P'WAI NGYET, BURM., is a resin found in the bazars throughout Pegu. It is yielded by the *Shorea robusta*, or the sal tree of India, which occurs plentifully in the forests on the Shan side of the Sitang, east of Tounghoo, and also, but to less extent, in the forests of the Prome district. The bee which produces it is small, but the material it prepares is very useful for caulking purposes for wood work. The Burmese prepare it readily by simply mixing it with wood-oil over a fire. The insect is the *Trigona læviceps*.—*McClelland.*

PWAN-HIA. CHIN. Mid-summer root, root of *Arum macrorum*, *Tatarinor*, or of *Pinellia tuberifera*.

PWO. The Pwo occupy the same region as the Sgau, to a short distance above Sitang. They have generally adopted Buddhism. They are distinguished by wearing embroidered tunics. Eight tribes in Burma speak the Pwo dialect. The Pwo and the Sgau as we approach the seaboard, are found mingled more or less together from Bassein and the Sitang to Mergui, living in the same villages, but the Pwo apart from, though more numerous than, the Sgau. The Sgau call them Pwo, but their own name is Sho, and the Burmese call them Meetkhyen, or in some sections Telaing Karen. They are muscular, and prefer the plains. All the Pwo burn their dead.—*Mason*, p. 92. See Karen.

PWON, a tribe with Shans on their north and south, on the right bank of the Irrawadi, in lat. 24° 30' N.

PYAL. ANGLO-TAMIL. A verandah in front of a house. The pyal is often used as a school-room, or as a place in which a traveller may rest.

The pyal or indigenous elementary schools have existed from time immemorial. They form a very large proportion of the existing schools in the country. Of 671 schools in the town of Madras, 388 were pyal schools. The three R's are taught fairly. The apparatus used is generally nothing more than the sanded floor, on which the pupil writes with his fingers, a black board, and the cadjan leaf. The average attendance in Madras is about twenty pupils. The pyal, or verandah of a native house, affords sufficient accommodation. The masters are paid by small fees; but during the celebration of the principal Hindu festivals, especially of the Dashara, their small incomes are supplemented by gifts of cloth, oil, rice, etc.

In the Godavery district, which, according to the 1871 census returns, has a population of 1,584,200, 8000 boys have an elementary instruction given them by their means. The number of these schools in the district previous to the passing of the Local Funds Act was 489. Of these, 453 were supported solely by private exertions and fees paid by the scholars, while 36 enjoyed the results grant system. The masters are not very learned, but in every instance they

bear a good moral character, and are important personages in the village in which they live, owing to their superior education and intelligence. They chiefly belong to the Brahman caste. But there are some few Satani, Shastri, Karnams, Rumsalis, and Banyans.

The scholars belong to every class of the community except Pariahs, and no separation of castes is made in the schools. Besides reading, writing, and arithmetic, the boys are taught to repeat long pieces of poetry.

PYCNONOTUS HÆMORRHOUS. *Gmel.* The Condatshi bulbul, from the crest on its head, is called by the Singhalese the Konda curula, or tuft-bird. It is regarded by the natives of Ceylon as the most 'game' of all birds; and training it to fight was one of the duties entrusted by the kings of Kandy to the Curuwa, or head-man, who had charge of the king's animals and birds. For this purpose the bulbul is taken from the nest as soon as the sex is distinguishable by the tufted crown, and, secured by a string, is taught to fly from hand to hand of its keeper. It is the common Madras bulbul. Another bulbul, the *Pycnonotus leucogenys*, *Gmel.*, is one of the chief songsters of the vale of Kashmir. *P. pygæus*, *Hodgson*, is the common Bengal bulbul, and of the Himalaya. There are other species.

PYGATHRIX NEMÆUS. *Geoff.* *Simia nemæus*, *Linn.*, a rare monkey, perhaps the most remarkable of the whole tribe for the variety and liveliness of the colours with which it is marked, and which are the more striking from being distributed in large masses. The upper part of the head is brown, with a dark-reddish chestnut frontal band. The cheeks are clothed with very long and whitish or yellowish-white hairs. The back, the belly, the arms, and the sides are grey with a somewhat greenish cast; the tail is whitish, and so are the rump and the forearms; the anterior fingers are blackish; the hips and thighs are blackish, and the legs of a brightish-red chestnut; the more exposed parts of the face are of a reddish tint. Length, rather more than 2 feet when erect; length of tail, about 1 foot 7 inches. It is a native of Cochin-China.—*Eng. Cyc.*

PYGUEUM CEYLANICUM. *Gært.* *Polyodontia*? *Walkerii*, *W. Ill.*; *P. acuminatum*, *Coleb.* *Kaukumbala*, . . . *SINGH.* | *Gal-moru*, . . . *SINGH.* *Kattayagas*, . . . " |

This tree is common on the hills of the south of India, and in Ceylon up to 4000 feet; it grows to an immense size, and occasionally has very large buttresses. Trees occur much over 20 feet in girth, with an enormous spreading head. Its timber is reddish coloured, and apparently adapted for cabinet purposes. The seed when bruised has a strong smell of prussic acid.—*Beddome, Fl. Sylv.* p. 59.

PYGUEUM WIGHTIANUM. *Blume, Walpole.* *Var. A. parvifolium*, *Gært.* | *Oonoonoo-gas*, . . . *SINGH.* A moderate-sized tree, growing in Ceylon at 8000 feet elevation.

PYRAMIDS built of great blocks of stone were a form of cairns in which were placed the bodies of the ancient rulers in Egypt. Subsequent dynasties have largely dismantled them in order to obtain building materials; but still, from the head of the delta of the Nile southward beyond Sakkara, where once existed the great cemetery

of Memphis, there are 70 of these tomb-pyramids left, and three of the largest are near Cairo, on the left or western bank of the Nile. The pyramid of Maydoom is supposed to have been built about the middle of the fifth millennium before Christ, some 2000 years before Abraham came into the world. Many suppositions have been put forward as to their object, but it is recognised that they are cairns,—tombs of the great men of the past, who sought not only to perpetuate their memory, but also to preserve their own bodies for that return to the world which was promised by their religion. They are all built on rocky and sandy plains. The largest is near Gizeh, and is 461 feet in perpendicular height, with a platform on the top 32 feet square, and the length of the base is 746 feet. It occupies 11 acres of ground, and is constructed of such stupendous blocks of stone, that a more marvellous result of human labour has not been found on the earth. Here also are caverns containing mummies, or embalmed dead bodies, which are found in coffins ranged in niches of the walls, and are at least 4000 years old. The Great Pyramid was the mausoleum of Khufu or Cheops of Dynasty IV. There have been a variety of opinions as to its dimensions. According to General Vyse, the present perpendicular height of the structure is 450 feet 9 inches, and the side of its present base 746 feet; and he gives the former height at 480 feet 9 inches, and the side at the former base at 764 feet. Like all the other pyramids, it faces the cardinal points. As regards the manner of elevating the stones, no explanation seems so probable as that of Robert Stephenson. It was done, he maintained, by conveying the blocks on rollers up inclined planes of sand; and this theory has been confirmed by the most recent facts concerning the building of Nineveh.

All the pyramids, except one at Sakkara, face the four cardinal points of the compass. All have their entrance on the north side. All contain provision for a single king's burial. Many are identified with the names of kings of whom it is recorded that they did build pyramids in various places; and the Great Pyramid is, without any doubt which a reasonable man can entertain, the burial mound of one of a long line of kings, who all erected similar mounds.

They are built of soft calcareous stone, of the same nature as the rock on which they stand, but faced with granite or syenite, most of which has been carried off for other structures. Herodotus mentions a block at Saïs, 21 cubits long, 14 broad, and 8 high, the transport of which, from quarry to site, employed 2000 men for three years. The stones were quarried out of the neighbouring hills, and some from the opposite side of the Nile, and are all of a great size, and carefully cut into shape.

First Pyramid, base,	767½ ft. sq.	Perp. height,	479 ft.
Second " "	690½ "	" "	447 "
Third " "	354½ "	" "	203 "

The second pyramid is in some points of inferior workmanship to the great one. Pyramidal forms are ordinarily given to the temples of the non-Aryan races of India. All Fiji temples have a pyramidal form, and are often erected on terraced mounds, in this respect reminding us of the ancient Central American structures. We meet the same terraced mounds also in Eastern Polynesia, with

PYRETHRUM INDICUM.

which Fiji and all other groups of the South Sea shares the principal features of its religious belief. The pyramidal sign Δ , with the apex upwards, was a symbol of fire; with the apex pointing down ∇ , it indicates water.—*Sharpe's History of Egypt*, i. p. 24; *Cal. Rev.*, Sept. 1861; *Piazz Smyth*; *Encyc. Britan.*

PYRETHRUM INDICUM. *H. Kunth.*

Anacyclus pyrethrum, Dec. | *Anthemis pyrethrum*, L.
Indian fever-few, . . ENG. | Akerkarra, . . . HIND.
Pellitory of Spain, . . . | Zoenil, . . . PANJAB.
Pyrethron, . . . GER. | Akarakarm, . . TAM., TEL.

This root was known to Dioscorides, and is still employed in eastern medicine. The plant is a native of Kashmir and the north of Africa, whence it has been introduced into the south of Europe. The fresh root is fusiform and fleshy, about the thickness of the finger, brownish-coloured externally, and white within. When handled in this state, it produces first a sensation of cold, soon followed by heat. It is without odour, but has an acrid pungent taste, and causes a copious flow of saliva; an irritant sialagogue, sometimes used to relieve toothache, or as a masticatory in palsy of the tongue, and relaxation of the uvula. *Pyrethrum roseum* is a very efficient insect destroyer.—*Royle*; *O'Sh.*

PYROLIGNEOUS ACID is made in India from cocoanut shell. A variety is produced by the distillation of chips of wood in an iron retort, provided with a bent tube leading to a receiver. In Bengal, the jainti, *Sesbania Egyptiaca*, is employed. It is allowed to settle 24 hours, and the acid separated from the oily matters is redistilled. It may be converted into pure acetic acid by adding sajji lota, the better kind of carbonate of soda (not the black kind), till all effervescence ceases.—*Powell*, p. 62.

PYROPE, a variety of garnet brought from Burma. It gives to transmitted light the colour of the ox's gall; and the Burmese name, in Pali, signifies ox-gall.—*Mason*.

PYROSOMA, a genus of molluscs, often spread over great tracts of the tropical oceans. These, like the compound Ascidians, consist of large colonies of small individuals, aggregated in the form of a cylinder open at one end, and often observed in shoals floating on the surface of the sea, emitting a bright phosphorescent light of a greenish lustre.—*Hart*.

PYROTECHNY as an art has attained considerable excellence amongst the natives of India and China, but in the manufacture and exhibition of their fireworks much depends on the combination of the materials and on the state of the weather.

For red and rose-coloured lights.

Strontia, chlorate, nitrate,	Calined blood.
sulphite, sulphate, carbonate,	Chalk or carbonate of lime.
oxalate of.	

For green of various shades.

Baryta, chlorate, nitrate,	Lead, chloride of.
sulphate, carbonate.	Calomel.
Lead, nitrate of.	Quinine, sulphate of.

For blue.

Copper, sulphate, ammoniate, verdigris, oxide, phosphate of,	Zinc, sulphate of.
	Lead, chloride of.
	Ammonia, sulphate of.

For yellow.

Soda, chlorate, bicarbonate, nitrate, oxalate, neutral tartrate of.	White Windsor soap.
	Sulphuret of arsenic.
	Calined sugar.

PYRUS COMMUNIS.

For white.

Potash, bichromate, chlorate of.	Sulphuret of antimony.
Fluate of lime.	Metallic arsenic.

For purple.

Strontia.	Compounds of chloride of
Arseniate of copper.	strontia and sulphate
Minium.	of copper.

PYRRHOCORAX ALPINUS, *Viell.*, the alpine chough, feeds on mulberries. It is easily distinguished from the Cornish chough (also a native of Ladakh), by the bill being shorter, and yellow instead of red.

PYRRHOSIA HORSFIELDII. *Blume.*

Horsfieldia odorata, *Wd.* | *Myristica Horsfieldii*, *Spr.*
Wild nutmeg, . . . ENG. | Kat-jadika, . . . TAM.

A tree of the forests of Travancore; its mace is used in medicine.—*Drury's Useful Plants*.

PYRULARIA WALLICHIANA. *Wight.*

Sphaerocarya Wallich., *W.* | *Scleropyrum Wallich.*, *W.*
A middling-sized or small tree, abundant

in Coorg and in parts of Wynad, at 3000 to 5000 feet elevation; it is also found in Ceylon, at 4000 to 6000 feet. The wood is light coloured, and curiously grained, and is in use in Ceylon for ordinary purposes. *P. edulis*, *Meisner*, *A.D.C.*, grows in Nepal, Sikkim, and the Khasya Hills. It has an edible fruit, and its wood is useful.—*Gamble*, p. 320; *Beddome*, *Fl. Sylv.* p. 304.

PYRUS, a genus of plants, mostly small trees, of the order Rosaceæ, and yielding the apple, the pear, and other fruits, with woods useful in the arts and for ornamental purposes. Many species grow and are cultivated in Central Asia, the Himalayas, China, and India.

<i>aucuparia</i> , <i>Gertner.</i>	<i>Kamaoni</i> , <i>Dens.</i>
<i>baccata</i> , <i>L.</i>	<i>lanata</i> , <i>Don.</i>
<i>communis</i> , <i>L.</i> , the pear.	<i>malus</i> , <i>L.</i> , the apple.
<i>cuspidata</i> , <i>Bertol.</i>	<i>microphylla</i> , <i>Wall.</i>
<i>ferruginea</i> , <i>Hook. f.</i>	<i>pashia</i> , <i>Ham.</i>
<i>foliolosa</i> , <i>Gertn.</i>	<i>polycarpa</i> , <i>Hook. f.</i>
<i>granulosa</i> , <i>Bertol.</i>	<i>rhamnoides</i> , <i>Dene.</i>
<i>Griffithii</i> , <i>Dene.</i>	<i>Sikkimensis</i> , <i>Hooker f.</i>
<i>insignis</i> , <i>Hook. f.</i>	<i>Thomsoni</i> , <i>King.</i>
<i>Jacquemontiana</i> , <i>Dene.</i>	<i>ursina</i> , <i>Wall.</i>
<i>Japonica</i> , <i>Thunb.</i>	<i>vestita</i> , <i>Wall.</i>
<i>Khasyana</i> , <i>Dene.</i>	<i>Wallichii</i> , <i>Hook. f.</i>

PYRUS AUOUPARIA. *Gertn.* Rowan tree,

roan tree. *P. ursina*, *Wall.*
Ranthaul, . . . CHENAB. | Battal, . . . JHELUM.
Wampu, Liti, . . . | Rangrek, . . . SUTLEJ.
Mountain ash, . . . ENG.

A small tree which occurs occasionally at from 8500 to 11,500 feet elevation in the Panjab Himalaya, up to near the Indus. It has red fruit, not edible. A belief in its power against witchcraft, and evil spirits of all kinds, seems to have been prevalent at a very early date. In Wales it is as religiously planted in churchyards as the yew in England.—*Eng. Cyc.*; *Stewart*; *Gamble*.

PYRUS BACCATA, *Wall.*, called liu, liwar, liho, liti in the Panjab Himalaya, is a small tree which is common wild, and cultivated on the Upper Chenab at 8200 to 10,000 feet. Its fruit is very small and very sour, but has the true apple flavour, and is much eaten by the people of Lahoul.—*J. L. Stewart*, *M.D.*

PYRUS COMMUNIS. *Linn.* Pear tree.

R. Sinensis, *Lindley*.

<i>Kumura</i> , . . . ARAB.	<i>Tang, Batang</i> , . . . JHELUM.
<i>Kummit</i> , . . .	<i>Klahta, Bahira</i> , . . . PUNJAB.
<i>Nak, Amrud</i> , . . . HIND.	<i>Chul</i> , . . .
<i>Naspali</i> , . . .	"

This is the pear tree of English orchards, easily distinguished from the apple tree by the shape of its fruit. It grows in the N.W. Himalaya; some trees are to be found in Bangalore and on the hills of S. India; but the fruit is of a tolerably large size, coarse and hard, which renders it fit only for baking and stews. The same kind of fruit is found in the upper provinces of Bengal. Wallich found a species of pear tree growing on limestone mountains near the Irawadi.—*Cleghorn*; *Eng. Cyc.*; *Riddell*; *Mason*; *Stewart*.

PYRUS JAPONICA. *Thunb.* A plant of Japan, with a quince-like fruit. One of the prettiest of small hedge bushes.

PYRUS KAMAONENSIS. *Wall.*

Ban-pala,	BEAS.	Aria,	PUSHTU.
Lisi, Mahaul,	CHENAB.	Ehrh.,	
Doda, Dodar,	HIND.	Kanglu, Mail,	RAVI.
Chota,	JHELUM.	Mar-phol, Palu,	SUTLEJ.
Chitana,	KAGHAN.	Gun palas,	TR-INDUS.
Mail tang,	"		

A common plant of Kaghan and the Panjab Himalaya, from 6000 to 10,500 feet.—*Cleghorn*.

PYRUS MALUS. *Linn.* Apple tree.

Tuffah,	ARAB.	Palu,	PANJAB.
Seb, Seo,	HIND., PERS.	Manra, Mana,	PUSHTU.
Sher,	JHELUM.	Amru,	
Seo-cho, Kushu, LAIDAKH.		Khajju,	RAVI.
Chung, Chunt,	PANGI.	Seba,	SANSK.
Chui,	"	Li,	SUTLEJ.
Tsunt,	"		

The apple tree is found in the Panjab Himalaya, the Sutlej valley, between Rampur and Sungnam, in Persia, all over the Dekhan, Berar, Sind, and at Bangalore. The apples of Kanawar want flavour compared with those of Kashmir. The two sorts of apples commonly found in most native gardens in the Dekhan are said to have been first introduced from Persia. One, sweet and luscious, grows in bunches; the other, which is larger, has a rough taste, and is better adapted for tarts. The trees may be propagated by layers, suckers, and even cuttings. They should never be allowed to throw out branches at less than two or three feet from the ground; all the buds beneath must be rubbed off. Never plant them closer to each other than from nine to twelve feet, and if there be sufficient ground, keep them separate from other trees, so that they can either be wintered or watered as required. Remove all suckers round the stem of the tree, or from the roots, unless required for stocks, then cut them clean off with a sharp knife. The trees may be opened immediately after the rains, if not in blossom. Pluck off all the leaves carefully, and beware in so doing that the blossom buds are not injured, which native gardeners, in the careless manner of stripping the leaves, are very apt to do; then prune the tree. As soon as the blossom appears set, put plenty of old rich manure to them, and water well every third day until the fruit is nearly ripe. If you continue watering after this, it makes the fruit mealy and insipid. When the fruit is all gathered, cease to water the trees, and as soon as the leaves turn brown and dry, which will be in the course of a month, then open the roots for two or three days, cover with manure again, and water well as before, when you may probably get a second crop in April or May.—*Cleghorn's Report*, p. 65; *Riddell on Gardening*; *Roxb.* ii. p. 511.

PYRUS SINICIA, the sand pear of China. It is cultivated in Northern India.

PYTHAGORAS, a learned Grecian. He held the views of Plato and Susruta as to medicine. He introduced Brahmanical institutions into Greece, and followed Plato in the doctrine of transmigration. Pythagoras, Thales, Solon, Anaxagoras, Eudoxus, and Herodotus, all visited Egypt to learn the sciences. Democritus of Abdera was the first who recog. Greeks had nothing more to learn from the Egyptian geometicians.

PYTHON of the Greeks, the Peten of the Hebrew, and Bøten of the Arab, was a fabulous huge serpent. It had an oracle at Mount Parnassus. Apollo is said to have slain this serpent, hence his name Pythius. The Pythoness (πυθωνίς) of the Greeks was a divining woman, as in Acts xvi. 16. See Krishna.

PYTHON, a genus of reptiles of the family Pythonidæ, known in India as rock-snakes. *P. reticulatus*, *Schneider*, is found in the Malay Peninsula, and *P. molurus*, *Linn.*, throughout India. They are commonly called boa or boa-constrictor, but the boa is a separate genus. Pythons of the Bhabar tract in Kamaon are up to 30 feet in length. Mr. St. John measured one in Borneo 26 feet long. Pythons are often observed hunting after frogs in damp situations; it is known to Muhammadans by the name of Azhdä. The boa-constrictor is not a native of Asia.

Python molurus, *Linn.* *P. trivittatus*, *Schl.*, the boa or rock-snake of Europe, is found all over the country. One was killed in Travancore, after having swallowed a doe spotted deer. In British India they rarely attack man, though, in September 1883, a lad is reported to have been crushed to death. They could easily do so.

Python reticulata, *Gray*, attains a length of 20 feet. It is the anakonda of Ceylon, or Ceylon boa, and when full grown it is said to measure from 17 to 20 and even 25 feet long, with a circumference of 2½ feet.—*Sirr's Ceylon*.

PYU, the Burmese who occupied Prome, distinct from the Burmese proper.

PYXICEPHALUS ADSPERSUS of Dr. Smith, the Matla-metlo of the Bechuana of South Africa, when cooked, looks like a chicken. The length of the head and body is 5½ inches, and the hind legs are 6 inches long. During the dry months they conceal themselves in holes, which they make at the foot of bushes.

Q

Q is the seventeenth letter of the English alphabet, and has but one sound, somewhat similar to k or hard c, but formed near the root of the tongue. In English it never ends a word, as it does in French and other European languages. Its nearest sound in the Arabic, Persian, and Urdu is represented by the letter ق as in taluq, qillah; but it may be represented by the letter k. In English words it is always followed by the letter u, the two letters as initial being in general pronounced like kw, as quake, quack, quick, queen; in some words the u is silent, as inique. But although the three consonants c, q, x are

called superfluous in English grammars, q historically represents a Hebrew and an Arabic letter; hence it has been generally so employed by the learned. In Qal قَال ARAB., he said, the q is a deep soft k, formed at the root of the tongue.

QADAM. HIND., PERS. The foot. Qadam-bosi, or Zamin-bosi, a humble form of greeting, meaning kissing the foot or the ground. Qadam-i-Ibrahim, the footstep of Abraham; Qadam-i-Mubarik, the blessed or happy footstep; Qadam-i-Rasul, the footstep of the messenger, i.e. Mahomed.

QADIRI, an adjunct to names of a sect of fakirs. Qadiriya is the order of devotees. Qadir Wallce, a celebrated Muhammadan saint.

QAF, a fabulous mountain in Muhammadan legend.

QAFILA. ARAB. A body of travellers, a caravan.

QALANDAR, an order of the darvesh or fakir; they are cenobites, shave the head and beard, abandon all family ties, and retire from the world. They are rarely seen in India.

QAMAT. ARAB. Part of the Takbir of the Muhammadan creed and ritual. Qiam, ARAB., the standing position in Muhammadan prayer.

QAZEE. ARAB. A judge, civil, criminal, and ecclesiastic.

QIAS. ARAB. In the Muhammadan theology, the analogical reasoning of the learned.

QIBLAH. ARAB. The temple of Mecca; any object to which a Muhammad directs his attention, or person revered, as a parent, a person in high authority. Qibla-numa, a compass; Qibla-i-do-jahan, an object of desire for this and the next world. Muhammadans when praying, in whatever part of the world they are, direct their faces towards the Kaba in Mecca, as their Qiblah.

QORAN. ARAB. The sacred book of Muhammadans. It was originally in Arabic, but is now in Persian, Hindi, Malay, Tamil, English. It was translated into English by Mr. George Sale.

QOWL-BEERA. HIND. The betel contract, a Muhammadan ceremony.

QUADRUMANA, Cuvier's name for his second order of mammiferous animals. It is the order Primates of later authors. It contains those forms among which will be found the nearest approach to man, and includes the families Simiadae and Lemuridae, and, with some authors, the Pteropodidae, Vampyridae, Noctilionidae, and Vespertilionidae of the sub-order Cheiroptera. The order Primates of Linnaeus consisted of the genera Homo, Simia, Lemur, and Vespertilio.

QUAGGA, also written Couagga, is the Equus quagga, Gm., a native of Africa. It resembles the horse more than the zebra. Its voice is not unlike the bark of a dog.—Cuvier. See Equus; Kyang.

QUAIL. Mr. Gould recognises the common quail of India as distinct from the European quail. The quails of British India are arranged by Jerdon under the genus *Perdica*, the dwarf partridges or bush quails, and the sub-families *Perdiciinae*, and the *Coturnicinae* or true quails; also the sub-family *Turnicinae*, or bustard quail, of the family *Tinamidae*.

Perdiciinae, Bush quails.

Perdica Cambayensis, Latham, jungle bush quail, all India.

P. Asiatica, Latham, rock bush quail, Dekhan S. of Nerbadda.

P. erythrorhyncha, Sykes, painted bush quail, ghats of S. India.

Coturnicinae, Quails.

Coturnix communis, Bonaterre, large grey quail, or European quail, Europe, India.

C. Coromandelica, Gmel., rain quail, black-breasted quail, all India, Burma.

C. Novae-Zelandiae, O. and G., New Zealand.

C. pectoralis, Gould.

C. Realteni, S. Muller.

C. histronica, Hartl.

Excalfactoria Chinensis, Linn., blue-breasted quail, British India to Philippines.

E. Novae-Guineae, Gmel., New Guinea.

E. Adamsoni, Verreaux, Celebes.

E. minima, Gould, Celebes.

Fam. Tinamidae; *Sub-Fam. Turnicinae*.

Turnix taigoor, Sykes, black-breasted bustard quail, Ceylon, British India.

T. ocellatus, Scopoli, hill bustard quail, Himalaya to Malayan.

T. Dussumieri, Temm., larger button quail, all India.

T. Sykesii, A. Smith, button quail, all India.

T. maculosus, Temm., Burma.

Coturnix communis, the common quail of Europe, Asia, Africa, is chiefly migratory, and is abundant in India, though M. Gould considers the race of British India to be distinct. The rain quail, *Coturnix Coromandelica*, is plentiful during the monsoon. The bush quail occurs in low jungle, now and then among the prickly shrubs by the margins of the fields.

The jungle bush quail, *P. Cambayensis*, is seen in coveys of from six to a dozen or more, and generally all rise at once with a loud whirring noise, uttering cries of alarm, and, after a short flight, drop down again into the jungle. The rock bush quail, *P. Asiatica*, in Hindi the Lova, rises in a bevy of a dozen or twenty together with a startling suddenness and bustle, dispersing among the neighbouring bushes. This and *P. Cambayensis*, the Girza, are much trained to fighting by Muhammadans. The European quail, or barra bater, is largely netted; it is mostly migratory, coming across the Himalaya at the ripening of the autumn and spring crops.

The hen-birds of the gulu, or gundu, or salai gundru, *Turnix taigoor*, are very pugnacious, and this propensity is utilized for their capture; a decoy bird in a cage, with a concealed spring compartment, is placed in a covert, and its loud purring call attracts the neighbouring females, who strike at the cage, and break the string of the trap.

The button quail, *Turnix Sykesii*, is the most diminutive game bird of India. It is flushed with great difficulty, flies but a few yards, and then sometimes allowing itself to be caught by hand. Its Hindi name is the Dabki or squatter.

The Nepalese put a pair of imitation horns on their heads, and walk slowly about the stubble fields, twirling grass in their hands to imitate the champing of cattle, and thus drive any quail they may see under a small net which they drop. Quails are hunted in N. China. The hawk is loosed to the quail, which it seizes in its talons; the falconer then rushes up and takes all in a net. In China, quail-fighting is an amusement.—Adams; Jerdon; Blyth. See Birds.

QUAMOOLIT, a genus of climbing plants of the natural family *Convolvulaceae*, chiefly found in the hot parts of America, but species are indigenous both in India and China.

Quamoolit coccineum, *Choisy*.
Ipomoea coccinea, L. | *Convolvulus coccineus*, Spr.
 A native of West Indies.

Quamoolit pennatum, *Voigt*.
Convolvulus pennatus, Des. | *C. pennatilis*, Salis.
C. quamoolit, Spr. | *Ipomoea quamoolit*.
Myat lam nee, . . . BURM. | *Sweta Kama-luta*, HIND.
Cyprus vine, . . . ENG. | *Ishk pecha* (love's
Crimson quamoolit, . . . FR. | ringlets), . . . PERS.
Jasmine rouge, . . . FR. | *Surya ratnalu*, . . . TEL.
Lal Kama-luta, . . . HIND.

The French and Burmese call this beautiful little creeper red jasmine, the English name it China creeper, and the botanists quamoolit or dwarf bean. It has two varieties, red and white. It is quite naturalized throughout the Tenasserim Provinces; the French name is both more descriptive and euphonious than any of the others. It flowers in the cold weather, and of a most beautiful bright crimson colour; tube long, slender; in gardens pretty common. The crimson variety is *Lal Kama-luta*, or red ringlets of Kama, the Hindu god of love. *Sweta Kama-luta*, white, is the Persian *Ishk pecha* (love's ringlets).

Quamoolit Phœniceum, *Choisy*.
Ipomoea Phœnicea, Roxb. | *Kasi ratnalu*, . . . TEL.

A very handsome climber with crimson flowers, tube long and slender; grows readily from seed.

Quamoolit vulgaris, the Indian forget-me-not, sometimes called the star creeper, from the shape of the flower, which is of a deep rosy red.—*Roxb.*; *Mason*; *Voigt*; *Genl. Med. Top.* p. 181; *Riddell*; *Jaffrey*.

QUANG-TONG, a province of China, abounding in gold, jewels, silks, pearls, tin, quicksilver, brass, iron, steel, saltpetre, sugar, ebony, and several sorts of odoriferous wood, besides fruit of all kinds. Quang-tung means broad east; Quang-si, broad west.

QUARANTINE LAWS are in operation in British India, and have been enforced relative to the plague of Egypt, and to some extent with cholera-morbus. The villages of the south of the Indian Peninsula strictly enforce it as regards the latter disease, by blocking up with hedges all the approaches to their hamlets.

QUARRYMEN or Masons, the Upera wanloo or Wadra wanloo of Telingana, are employed in digging tanks, making salt, and in road-making.

QUARTZ, Wuh-sih-shih-ying, CHIN., is nearly pure silica. It occurs both massive and in crystals of all sizes, and of a great variety of colours. Is much used in the bodies of pottery, and in making enamel and glass. Quartz rock has been found the richest in metals of all the Indian rocks. At Callastry it contains lead ore mixed with silver; at Nellore, copper; at Nagpur, manganese, lead ore, and copper. Micaceous iron ore is a very common product of this rock, and gold occurs in the western parts of the Peninsula of India. A quartz dyke, 50 to 100 feet in height, runs N. and S. to the W. of Hyderabad, in which crystals of amethyst occur.

Brown or Smoky Quartz occurs in fine crystals near Cairngorm in Aberdeenshire, and it is used for seals and ornaments when cut and polished.

Purple Quartz or Amethyst is found both crystallized and massive. It is of every shade of purplish violet, and the colour in the perfect amethyst is pretty equal throughout the crystal or mass; frequently, however, the summits of the crystals

only are coloured. It is used for ornaments. Amethysts of the first quality are found in India, Ceylon, Persia, and Siberia.

Besides these colours, there occur blue quartz (siderite), green, red (hyacinthine), and yellow (Scotch topaz, Bohemian topaz), with the quartzose minerals and inferior gems, agate, aventurine, bloodstone, flint, jasper, chrysoprase, and opal.

The Chinese name includes several quartzose minerals, fluor spar, cairngorm, common quartz.

Beautiful regular crystals of quartz, called Kalabagh and Murree diamonds, are found in the gypsum of Murree, Kalabagh, and Sardi in the Panjab. They are transparent, milky, or red. They occur in the six-sided and dodecahedron form.

Hornstone and Chert are varieties of compact quartz. Cavernous quartz is termed spongiform quartz or swimming stone.

Green and Red Quartzose Sandstone of Vellore were used formerly by farriers, but are now replaced by sills of corundum and lac.

Yellow Quartzose Sandstone of Woodiagherry was used formerly for giving a first edge to swords, daggers, and implements; hard, rough, and well suited for grindstones. See Precious Stones.

QUASSIA is a bitter drug, the woods of *Q. excelsa* and *Q. amara*.

Quassia amara.
 Bitter quassia, . . . ENG. | Quassienholz, . . . GER.
 Bois de quassie, . . . FR. | Lenode quassia, . . . SP.

This native of Surinam, Guiana, Colombia, and Panama was introduced into Bengal by Lord Auckland. It thrives tolerably well in the Calcutta garden. Quassia wood is a very pure and simple bitter, and has been much employed in bilious and intermittent fevers, dropsies from debility, atonic gout. A decoction of quassia is much used as a poison for flies.

Quassia simaruba.
 Bitter or mountain damson. | *Simaruba amara*, Lindley.

The bark is used medicinally.—*O'Sh.*

QUEDA, a small state and seaport on the west coast of the Malay Peninsula; lat. 6° N., long. 100° 27' E. The water on the Queda coast is very shallow, and ships keep a considerable offing. The highest detached hill on the Queda main is Gunung Gerai, or Queda Peak, a mass of granite, whose summit is estimated at 5000 feet above the level of the sea. According to Dr. Ward, north of Queda Peak is an immense plain, almost level with the sea, covered near the coast with rising mangroves. The king of Queda about 1770 gave his daughter in marriage to Captain Light, and the island of Penang as her dowry, and the E. I. Company subsequently purchased the island.—*Newbold's British Settlements*, p. 4.

QUEEN.
 Malikah, AR., HIND., PERS. | Rani, . . . HIND.
 Reine, . . . FR.

QUEEN COCOANUT. The fruit is of a bright gold colour, and the blossoms, both of that and of the common kind, are very effective among the dark leaves.—*Frere's Antipodes*, p. 162.

QUEEN OF HEAVEN, a position allotted by the ancient Babylonians, the Phœnicians, and the Italians, also by the present Buddhists and others of China, and likewise by the modern Hindus, to a female divinity. The Babylonian queen of heaven was called Anatu, consort of Anu, lord of the heavens. The Phœnician deity was named

Astarte; she was the Ishtar of Babylon. In Jeremiah xlv. 15-17 and 19 (see also Judges x. 6; 1 Samuel vii. 3, xii. 10), Astarte or Ashtoreth or Baalith, the queen of heaven, was the great female divinity of the Phœnicians, the female power of Baal, whom the Greeks changed into Baaltis or Belthes. This goddess was worshipped in the chief city of Sidon, but her worship was extended to the east of Jordan. Physically, she represented the moon, hence her name in Genesis xiv. 5, Deuteronomy i. 4, Joshua xii. 4, Ashtarothe Karnaim, or the two-horned, from the crescent moon (see 1 Kings xi. 5, 33; 2 Kings xxiii. 13). The queen of heaven mentioned in Jeremiah vii. 18, xlv. 15-19, was the goddess known to the Greeks and Romans as Astarte. This was the Phœnician Ashtarothe or Ashtoreth, a term which was used in combination with *hys*, and, according to Gesenius, appears to indicate the male and female powers. At Hieropolis in Syria, her emblem had a magnificent temple served by more than 300 priests. It was placed in the interior, and only the higher of the priesthood were permitted to approach it, and near it was the male emblem. Solomon (1 Kings xi. 4-8) built a temple for Ashtarothe on the Mount of Olives. The Romans and Greeks called her Astarte, and regarded her as the analogue sometimes of their Juno or Venus, or as the Cybele of the Phrygians, or the Ephesian Diana. Jeremiah tells us (vii. 18) that bread was one of the articles offered to Ashtarothe, and in his time, B.C. 588, the women of the Jews particularly seem to have been, almost all of them, devoted to the worship of this goddess. In chapter xlv. 17, 18, and 19, on the people refusing to listen to him, the women announced that they would burn incense unto the queen of heaven, would pour out drink-offerings unto her, as their fathers and princes in Judah and Jerusalem had done, for then they had plenty of victuals, were well, and saw no evil. But since they had left off burning incense, they had wanted all things, and been consumed by the famine and the sword.

Astarte, one of the Syrian deities, corresponds with the Venus of the Greeks, the Isis of the Egyptians, and the Mithra of the Persians. She had a famous temple at Hieropolis in Syria.

Ishtar, daughter of Anu, king of heaven, was a goddess of the Babylonians. She was queen of Erech, and is sometimes represented as divine, sometimes as human. Her character resembles that of the Venus of the Greeks. Her first husband was Dumuzi, Tammuz, or Adonis (Ezekiel viii. 14), whose death was celebrated with great ceremony in the east, and women sat weeping for him.

Juno, the queen of heaven of the Greeks and Romans, was wife of Jupiter. She was a chaste goddess; she protected cleanliness, presided over marriage and childbirth, particularly patronised the most faithful and virtuous of her sex, and severely punished incontinence and lewdness in matrons. At Rome, no women of debauched character was permitted to enter her temple or even to touch it.

Judges ii. 13, about B.C. 1401, says of the Israelites that they forsook the Lord and served Baal and Ashtarothe. 1 Samuel vii. 3 (B.C. 1056), Samuel urged the Israelites to put away the strange

gods and Ashtarothe; in xii. 10 he showed them how, on a former time, the Lord had shielded them on their putting away Baalim and Ashtarothe; and in xxxi. 10, the Philistines, having routed the Israelites and slain Saul, they hung up his armour in the house of Ashtarothe; 1 Kings xi. 33 (B.C. 984), Ahijah warned Jeroboam that only one tribe of the Israelites would be left as subjects to Solomon, because Solomon had forsaken the Lord and worshipped Ashtarothe, the goddess of the Sidonians, Chemosh, the god of the Moabites, and Milcom, the god of the children of Ammon.

Yin and Yang, in Chinese philosophy, the two great female and male vivifying elements, from which have proceeded all material things. They are constructed by describing two equal semi-circles with a circle round them, thus—☯—the yin or female side being dark with the eye bright, whilst the yang or male side is bright with the eye dark. This emblem has never been personified by the Chinese, whose queen of heaven is their Tien-How, called also Ma-tsoo-po; she is the goddess of the sea, and every ship is furnished with this idol.

Modern Hindus have had three deities, Brahma, Siva, and Vishnu, who have been regarded by their respective followers as Supreme; but Brahma is now neglected, and the latter two alone receive worship. All the believers in Siva entertain the male and female philosophy, of which the lingam and the yoni are the representatives. These emblems are in all the Saiva temples and households, in stone or metal, and are always together. Neither of these emblems have ever been personified, though the lingam is the phallus and priapus of the Greeks and Romans. They are innumerable, exposed everywhere in India to the open air.

Parvati, the mountain goddess, daughter of Himavat and wife of Siva, is with the Saiva sect Jagan-mata, mother of the world, a severe deity, addicted to austerities.

Lakshmi is wife of the Hindu god Vishnu, and mother of Kama. She is said, like Aphrodite, to have sprung from the froth of the ocean in full beauty, with a lotus in her hand, when it was churned by the Daitya and Asuras. In the varied incarnations of Vishnu, she has assumed the forms of Dharani, Sita, and Rukmini. She is the type of womanly beauty, and with the Vaishnava sect is Loka-mata, mother of the world.

Saraswati, wife of Brahma, is goddess of speech and learning, inventress of the Sanskrit language and Deva-Nagari letters, and patroness of the arts and sciences. As a river goddess, she is lauded for the fertilizing and purifying powers of her waters, and as the bestower of fertility, fatness, and wealth.

In the cosmogony of the modern Hindus, their philosophy has not advanced beyond the idea of the union of the sexes, and is evinced in their custom of marrying a new orchard to its well, of marrying vicariously a man and woman to a tree, of reverencing the junction of rivers and the natural engrafting of trees.

The Buddhists of China have also a queen of heaven. Shin-mu, or the sacred mother, is frequently represented sitting in an alcove with a child in her arms, a glory round her head, and with tapers burning constantly before her.

QUEEN OF SHEBA. See BALKIA.

QUERCUS, Oak.

Baalut,	ARAB.	Quercia,	It.
Holt-hub,	CHIN.	Dab,	Pol.
Eeg,	DAN.	Roble, Carbalho, Port, Sp.	
Eik,	DUT.	Dub,	Rus.
Chene,	FR.	Ek,	Sw.
Eiche,	GER.		

The oaks and the chestnuts are well known for their rich and luxuriant growth, and are the ornaments of European forests. The genus is found from the northern to the most southern and eastern parts of Asia; in the mountains of China, Japan, Nepal, Kamaon, Sylhet, Chittagong, Penang, and Taong Dong, and from moderate elevations to the limits of forest life. Though almost unknown in Ceylon, the Peninsula of India, tropical Africa, and South America, they abound in the hot valleys of the Eastern Himalaya, East Bengal, Malay Peninsula, and India Islands, where, perhaps, more species grow than in any other part of the world.

The barks of oaks, alders, birches, willows, and poplars abound in gallic acid and tannin, and all have therefore been frequently employed for tanning; also as tonics and febrifuges. Quercitron, the bark of *Q. tinctoria*, dyes wool yellow. Gall-nuts, called majoo phal, are imported into India, being produced by the puncture of *Cynips quercusfolii* on *Quercus infectoria*, a native of Asia Minor, Armenia, and Kurdistan. *Q. ilex* and *Q. cerris* afford inferior galls. The cupules of the glands of *Q. Ægilops*, called velonia and velani (a corruption of *βελανι*) and velameda by the modern Greeks, are collected in Ceos, and used for the same purposes. The Kermes insect fixes itself upon *Q. coccifera*, hence called Kermes oak, a native of the S. of Europe and N. of Africa. *Q. ballota*, sweet-acorn oak, that probably described in Persian works under the names Shah-balloot and Balloot-ul-malik, is a native of Spain, N. of Africa, and of parts of Greece; this having acorns free from tannin, has been long used as food by the inhabitants of the above countries. It might very probably, as well as the cork tree (*Q. suber*), a native of the hot parts of Spain and France, be naturalized in the plains of Northern India, where *Q. incana*, from elevations of 5000 to 7000 feet in the Himalaya, is perfectly at home. The acorns of this species are sold in bazars under the name balloot, being used by the natives in medicine.

Dr Wallich found seven different species of oak in Burma and on the Tenasserim coast, and all afford useful timber, though inferior to the English oak.

In Japan are—*Quercus glabra*, *acuta*, *glauca*, *cuspidata*, *serrata*, *glandulifera*, *dentata*, *phylloroides*, *Sieboldiana*, *urticæfolia*, *canescens*, *variabilis*, *aliena*, *crispula*, *Burgerii*, *sessifolia*, *salicina*, *myrsinaefolia*, *gilva*, *grosse*, *serrata*, *lacera* marginata, *lævigata*. The following occur in China:—*Quercus cornea*, *Mongolica*, *dentata*, *Chinensis*, *Fabii*, *ilex*, *serrata*. Many of the 23 Japanese species appear to be peculiar to the Indian Archipelago, or only occur near the south-eastern angle of Asia, where they reach their most southern limits, being scarcely known in a wild state in the southern hemisphere. The Indian and Burmese species are—*Quercus acuminata*, *Ægilops*, *Amherstiana*, *annulata*, *ballota*, *balloot*, *bancana*, *Brandisiana*, *dealbata*, *dilitata*, *eumorpha*, *Falconeri*, *fenestrata*, *Griffithii*, *ilex*, *incana*, *lamellosa*, *lanceafolia*, *lanuginosa*, *lappacea*, *mespilifolia*, *mixta*, *occidentalis*,

oila, *oxyodon*, *pachyphylla*, *pedunculata*, *polyantha*, *robur*, *semecarpifolia*, *semiserrata*, *serrata*, *sessiliflora*, *spicata*, *Thomsoniana*, *turbinata*, *velutina*, and *xylocarpa*.

Captain Gerard tells us of three species of oak in Kanawar,—Monroo and Khursoo, which grow at 12,800 feet, and the Ban (*Q. incana*), which disappears at 8000 feet. Major Benson, writing in British Burma, remarks that *Q. fenestrata*, *Q. turbinata*, and *Q. velutina* produce good, durable timber, resembling that of the *Dillénias* in density and elasticity, though the trees do not grow of that size to make the timber of the same value as the *Dillénias*. *Q. Chinensis*, the Chinese oak, a beautiful species found in mountainous places in China, is said to have exactly the habit and appearance of a Spanish chestnut. It grows to the height of 50 feet. *Q. mannifera*, of Kurdistan, is said to yield a sweet mucilaginous substance from its branches and leaves by steeping them in boiling water at the hottest season of the year, and afterwards evaporating the water. This substance is made into cakes, and sold in the markets of the town of Van under the name of Ghiok-Helyashee, 'the sweetmeat of heaven.' The species is very near *Q. sessiliflora*, especially a form of it which has been named *Q. Mongolica*. *Q. regia* and *Q. rigida* also occur in Kurdistan.

Quercus acuminata, Wight Ic., Roxb.; Hunnee, HIND.

Quercus Amherstiana, Wall., Tirbhæ, BURM. A large tree of Martaban, used in boat-building.

<i>Quercus annulata</i> , Sm.	
Bani, Bran,	KOTGARH | Hunne, Phaliat, PUSHU.
Ban-kan, Bren, PUSHU.	Funiat,
Ban-kahoo,	"

The ring-cupped oak grows in the outer ranges of the Sikkim Himalayas, to the height of 10,000 feet; wood white, not valued.

Quercus ballota, W., the Barbary oak; Shah-balloot or Balloot-ul-malik of Persia is probably the tree mentioned by Theophrastus. It is a native of Spain and Greece.

Quercus cornea, *Loureiro*, an oak of Cochinchina, Hong-Kong, and S. China. The leaves are not given to silkworms.—*Smith*.

Quercus dentata, *Thunb.*, Hoh, CHIN., a large leaved oak of China and Japan. It has long feathery filaments outside the acorn.—*Smith*.

Quercus dilatata, *Lindley*.
Quercus taxidora.

Mohru, Here'u, CHAMBA.	Chora,	KAGHAN.
Barungi, Parungi, HAZARA.	Marghand,	KANAWAR.
Kaliring,	JHELM.	Bar, Char, MURREEHILLS.

This fine evergreen oak is found in the Sutlej valley between Rampur and Sungnam at an elevation of 6000 to 9000 feet. It yields an excellent heavy wood.

Quercus fenestrata, *Roxb.*, grows in the Khassya Hills, is a native of the mountains in the vicinity of Sylhet, and grows in Burma and the Tenasserim provinces not 50 feet above the level of the sea. It affords useful timber.

Quercus floribunda, *Cleghorn*, Barcha, HIND., is found in the Sutlej valley between Rampur and Sungnam at an elevation of 9000 feet.

and Bungnam to an evergreen oak.			
Charai, Chora,	HIND.	Iri,	PANGL.
Chur, Jari, Kori,	"	Bre,	PANJ.
Chota,	LAHOUL.	Khar paloo-cherai,	"
Barungee,	MURREE.	Ghwara-cherai,	"

This is found in Kaghan, the Sutlej valley be-

QUERCUS.

tween Rampur and Sungnam, at 5000 to 8000 feet elevation; it is the principal firewood in the hill stations. Charcoal is made of it. The English residents at Dharmasala use it for beams and rafters. The tree attains its full size in 100 years, and a very old tree yields a log or trunk of first branch from 16 to 20 feet in length (?), and 6 feet in circumference; wood of a red colour, hard, tough, and heavy, coarse-grained, liable to warp and to decay if exposed to wet; leaves given as fodder to cattle. Its acorns, Balut sil supari, are sold in the bazars of the N.W. Provinces under the name of Shah-ballot. Used for indigestion, diarrhoea, and asthma. Recommended for chronic diarrhoea in children, after burying in the earth to remove their bitter principle, then washing and grinding. *Stewart.*

Quercus incana — ? Himalayan ilex.

Ban, Banji, . . . HAZARA.	Sper-cherai (white oak), . . . PUSHTU.
Rin, Rinj, . . . " "	" " " " " "
Munroo . . . of KAMAON.	Vari, . . . of SALT RANGE.

A beautiful tree of Kamaon, very like the evergreen oak of Europe. Its leaves are much more woolly on the under side. The wood is coarse, but lasts well under cover, where it is not exposed. It is extensively used for fuel at the hill Sanatoria, where the tree grows abundantly at from 3500 to 8000 feet elevation.

Quercus infectoria, *Olivier*, gall oak.

Afees, ARAB.	Dyer's oak, ENG.
Pyeen-ta-gar-nee-thee, BURM.	Majoo-phal, HIND.
Man-phal, DUKH.	Maja-kanee, MALEAL.
	Mazoo, PERB.

Asia Minor, Armenia, and Kurdistan, a shrub 4 to 6 feet high. A very common scrubby bush in Asia Minor, where its branches are attacked by an insect, the Cynips, which punctures them, and causes the formation of the oak-galls.

Quercus lanceifolia, *Roxb.*, a tree of the Garo Hills and Assam. Wood light-coloured like the English oak, but harder, and reckoned, where it grows, one of the most durable timbers.

Quercus lappacea, *Roxb.*, a tree on the Khassya mountains. Wood strong, in colour like that of the common oak, but hard and more close-grained.

Quercus lucida and *Q. muricata*, *Roxb.*, are Penang trees.

Quercus Mongolica, *Fischer*, Tsoh-shu, CHIN., an oak of N. China, with small leaves, on which the silkworm is fed. — *Smith.*

Quercus pedunculata, its bark used medicinally.

Quercus prinodes, *Linn.*

Quercus serrata, *Roxb.* | Shingra, HIND.

A tree of the Garo Hills, yields a useful timber.

Quercus semecarpifolia, *Wall.*

Alpine oak, ENG.	Kharao, Khatao, PANJ.
Banchar, Banohar, PANJ.	Kharshu, "

This ascends above the range of pines, and is one of the most alpine trees of the North Himalaya. It is an evergreen species. Its acorns are named Shah-ballot. It is found in the Sutlej valley between Rampur and Sungnam at an elevation of 9000 to 12,000 feet. No oak nor chesnut ascends above 9000 feet in the interior of Sikkim, where they are replaced by a species of hazel (*Corylus*); in the North Himalaya, on the other hand, at 10,000 and 12,000 feet, on the southern face of the Himalaya, as at Chur, Kedarkanta, and Changshel, the *Quercus semecarpifolia* generally forms the forests at their highest limits, though other species of *Quercus* are found below, with

QUETTA.

Taxus, *Betula*, *Deodara*, *Pinus excelsa*, and *Morinda*. *Q. semecarpifolia* is a magnificent tree, and its timber is much esteemed by the natives. Wood white and heavy; subject to insects and liable to warp; used for making charcoal, and by zamindars for ordinary house-building purposes; produces also good and large timber.

Quercus semiserrata, *Roxb.*, Thit-kya, BURM., a tree of the Garo and Khassya Hills and British Burma. Wood used for plugs or pins, to join together the three pieces which compose the body of a Burmese cart-wheel. *Qu. Q. prinodes.*

Quercus spicata, *Buch.*, a tree of Nepal, of the Garo, Khassya, and Chittagong Hills. Wood lighter coloured than English oak, but equally close-grained, and apparently as strong.

Quercus suber, the cork tree, of all the warm parts of Spain, but is most abundant in Catalonia and Valencia. In the property of forming a spongy soft substance on its bark, it surpasses all other European trees, and hence is of the greatest value for corks and for similar purposes. *Quercus occidentalis*, one of the varieties of *Q. suber* affording cork, in Southern France, Spain, and N. Africa. This species is confined to the Atlantic provinces, and is distinguished by its acorns ripening in the second year. The first gathering of the bark takes place when the trees are about 12 to 15 years of age. This is burned, being almost useless. There is a second gathering some 7 or 8 years later, of porous cork, and after a similar interval, a third or better quality, which may be used for corks. The harvest is continued at intervals of 7 to 10 years, the best cork being produced by trees on a poor soil.

Quercus turbinata, *Roxb.*, grows in Chittagong, in Burma, affords useful timber, though inferior to English oak. *Roxburgh* says it is only used for fuel.

Quercus velutina, *Tha ghau*, BURM., grows in Burma and the Tenasserim Provinces. It affords useful timber, though inferior to English oak. — *Capt. Gerard, Kanawar; Messrs. Barnes, Fortune, Gamble; Hodge, Nagasaki; Powell; Cal. Cat. Ex.*, 1862; *Messrs. Balfour, Cleg, Hook, Mason, O'Sh., Roxb., Riddell, Royle, Stew., Voigt, Wright, Thun.*

QUERQUEDULA, the teal genus of birds, comprising as under:—

<i>Q. crecca</i> , <i>Linn.</i> , common teal.
<i>Q. circia</i> , <i>L.</i> , blue-winged teal.
<i>Q. gloeitans</i> , <i>Dallas</i> , clucking teal.
<i>Q. javana</i> , <i>Budd.</i> , Java teal.
<i>Q. manillensis</i> , <i>Gm.</i> , Manilla teal.
<i>Q. numeralis</i> , <i>Mull.</i> , eastern teal.

See Teal.

QUETTA, a town of Baluchistan in the valley of Quetta or Shawl. The valley is about 15 or 20 miles in length, and from 4 to 6 in breadth. It is bounded to the westward by the Chah'l Tan range, having a strike of S.S.W. by N.N.E. Quetta is about 5900 feet above the sea, and has about 4000 inhabitants. The mountainous table-land of Baluchistan extends from Cape Monze on the south to the Afghan mountains north of Quetta, or from 25° to 30° 40' N. latitude, and is consequently about 340 miles in length. In breadth it extends from the level plains of Cutchi eastward, to Nooshy on the borders of the Seistan desert on the west, extending thus about 150 miles. But its breadth is by no means uniform; widest about the centre, it gradually narrows southward, until at Cape Monze it is only a few miles broad.

QUFL.

The fort or kot, in lat. 30° 12' N., long. 66° 55' E., is situated at the northern end of the valley, on the direct route from Jacobabad and Shikarpur to Kandahar via the Bolan pass. It is surrounded by a mud wall, and has two gates, the eastern and southern, or Shikarpuri gate. In the centre of the town, on an artificial mound, stands the miri or citadel, in which the governor resides, and from which there is a very extensive view of the neighbouring valley. The water is good, and there are many gardens and orchards in the suburbs. Quetta was occupied in the British wars with Afghanistan in 1838-42, and again from 1876 and during the Afghan campaigns of 1878-80. Quetta formed the base of operations of the southern column, and is now held by the British. —*Imp. Gaz.*

QUFL. HIND. Any lock; in Muhammadan divination, a lock for resolving mysteries.

QUICKLIME.

Abak,	ARAB.	Honnu, Hunnu, . .	SINGH.
Chunam, Chuna, . .	HIND.	Chunambu,	TAM.
Calcium,	LAT.	Sunnum,	TEL.
Nureh,	PERSS.		

The common method of obtaining quicklime is by the process of burning, in which limestone mixed with wood, coal, or charcoal is exposed to a strong heat; in this way the carbonic acid is expelled, and the product called quicklime is the result. It is white, of a pale grey tint, opaque, inodorous, and its taste acrid and alkaline. When water is poured upon quicklime, it heats, crackles, swells, and a bulky white powder is obtained, called slaked lime. Lime is used as a manure and as an ingredient in mortar. In several metallurgic processes, it is used as a cheap and powerful flux; it is also extensively employed in soap-making, leather-dressing, dyeing, and medicine, besides many other purposes in common life and the arts. Chunam is applied to quicklime made from calcined shells. —*Faulkner.*

QUICKSILVER, Mercury.

Vif-argent, Mercure, .	FR.	Argento vivo, Mercurio, It.
Quicksilver,	GER.	Azogue,
Para,	HIND.	Jewa,
		TURK.

Quicksilver is said to occur about six miles from Colombo and Trincomalee. While some excavations were making in the laterite on the sea-face of the fortress of Cannanore in 1857, globules of fluid mercury were found in the cells of the laterite, giving the appearance of its being of natural occurrence. The quantities and value imported into India have been as under:—

	1874-75.	1875-76	1876-77.	1877-78.	1878-79.	1879-80.
Lbs.	160,744	524,298	217,181	207,981	250,884	531,393
Rs.	1,01,200	10,75,105	3,69,323	2,89,001	3,88,047	5,88,436

—*As. Ann. Reg. 1799; Joinville's MSS.*

QUILLS.

Plumes à écrire, . .	FR.	Stivoli,	RUS.
Posen, Feder kiel, .	GER.	Canones para escribir, Sp.	
Kalmi,	(GUJ.), HIND.	Tuy-kalam, Tuy, .	TURK.
Penne de scrivere, .	IT.		

The strong wing-feathers of the goose, used for writing.

QUILON, a seaport town on the Malabar coast, in lat. 8° 53' 28" N., long. 76° 36' 59" E. It is in the Travancore State, and has been written Collam, Coulon, and Coilon, derived from the Tamil for a tank. Its population is about 15,000, and is occupied by a detachment of the Madras army. It has been known to western nations from very early times as a commercial town, and

QUININE.

the Imperial Gazetteer says it is mentioned as Coilon in a letter of the Nestorian patriarch Jesu Jabus of Adiabene, who died A.D. 660. It appears in Arabic as early as A.D. 861, under the name Kaulam-mall, when it was already frequented by ships from China; and during the 13th and 14th centuries it continued to be the great port of trade with Malabar, from China and from Arabia. It is the Coilon of Marco Polo, and the Columbum of several ecclesiastical writers of that age, one of whom, Friar Jordanus, was consecrated Bishop of Columbum about 1330. It was a great port for pepper, Brazil wood, and for ginger, the best kind of which was known till late in the middle ages as Columbine ginger. In the beginning of the 16th century, Varthema speaks of it as a fine port, and Barbosa as 'a very great city,' and 'with many great merchants, Moors, and Gentoos, whose ships traded to all the eastern ports as far as Bengal, Pegu, and the Archipelago . . . Throughout the middle ages it appears to have been one of the chief seats of the "Saint Thomas Christians," and formed with Kayal (Koilpatam, Koel church, Patanam town), one of the seven churches ascribed by Indo-Syrian tradition to Saint Thomas himself' (Col. Yule's Marco Polo, ii. p. 365, ed. 1874).

In 1503 the Portuguese established a factory and fort, captured by the Dutch 150 years later. Besides these changes, the town was at different times subject to Cochin, Cully Quilon, and Travancore. In 1741 Travancore unsuccessfully besieged it, but the following year the Quilon raja submitted. The natives of the country begin their era from its foundation, in the same manner as the natives of Cochin begin theirs from the origin of the island of Vaipéen. In former days there were a great many weaving-loom and manufactures of cotton and stoneware here. Alexius Menezes, the first Archbishop of Goa, built an excellent fortress here, which afterwards fell into ruins, being neglected by the Dutch. —*Col. Heber Drury; Imp. Gaz.*

QUINCE, Cydonia vulgaris.

Suffurgul, Safarjalat, AR.	Melacotogna, . .	IT.
Qvæde,	DAN.	Bihidana,
Kwepeer,	DUT.	Marmelo,
Semen de Coig, Coing, FR.		Membrillo,
Quineunx,		Qoitten,
Quitten korne, . . .	GER.	SW.

The quince is a native of the south of Europe, and grows in Persia; its fruit is stewed, and it makes good marmalade. In the Panjab there are three kinds of quinces—(1) Shakkar, or sweet; (2) Tursha, sour; (3) Miyana, or middling. The first is eaten fresh, and has a delicious perfume; the second is dried, candied, etc.; the seeds of all are demulcent, and used in sherbets and as a cooling drink in fever. They abound in mucilage, and constitute an important article of commerce, being highly valued as a demulcent tonic and restorative remedy by the Hindus and by Muhammadans all over the east. They are imported into Bombay and Calcutta from the Persian Gulf, and into Northern India they are brought from Kabul and Kashmir. —*Powell; Hogg; Faulkner.*

QUININE was discovered in 1820 by Pelletier and Caventou, French chemists; cinchonidine and quinine in 1852 by M. Pasteur. It is a vegeto-alkali obtained from cinchona bark. The medicinal properties of the Peruvian barks are

QUININE.

due to these vegeto-alkalis. The refuse or mother liquor of the quinine manufacturers contains amorphous quinine, also called chinoidine or quinoidine. It is a yellow or brown resin-like mass, insoluble in water, but freely soluble in alcohol and ether, as also in dilute acids. Quinine is one of the easiest drugs to adulterate, as the substances mixed with it are of very similar appearance and properties. Cinchona bark contains several alkaloids of more or less febrifuge properties; quinine, the principal, is accompanied by cinchonine, cinchonidine, and perhaps other minor alkaloids, all of which have a strong resemblance to quinine, but possess febrifuge properties more or less inferior to those of quinine, and often producing different symptoms. These alkaloids have always been separated by the European manufacturer, as the mixed alkaloids would be unsaleable there, and they are disposed of separately, each at its own market price, the inferior alkaloids fetching often less than half the price of quinine. Barks vary in the proportion of alkaloids they yield; but it may be said that for every ounce of quinine manufactured there are at least two ounces of inferior alkaloid produced. The alkaloids find a certain outlet amongst private practitioners making up their own medicines, in the dispensaries of hospitals and parish infirmaries, and other circumstances where the high price of quinine restricts its use; but much of these alkaloids is mixed with quinine intended for exportation. This mixture is a fraud, because these inferior alkaloids require a much higher dose (30 to 50 per cent. more) to produce the same febrifuge effects as quinine in mild cases; they often completely fail in severe cases of ague, and generally cause nausea and other unpleasant symptoms. In France, pharmaceutical authorities who inspect druggists' shops, condemn all quinine found to contain more than three per cent. of cinchonine.

The cinchona plants, introduced into India by Mr. Clement Markham's (C.B.) devoted exertions, have been largely cultivated, and the Governments of Bengal, and Madras have been manufacturing the alkaloids, either separating them or keeping them combined, styling the latter condition the cinchona febrifuge or mixed cinchona alkaloids. 100 parts of it have been found to contain quinine, 15.5; cinchonidine, 29; cinchonine, 33.5; amorphous alkaloids, 17; and colouring matter, 5.

The Madras Government, about the year 1882, forwarded to the Secretary of State consignments of cinchona barks, from the estates at Naddewatum, Dodabetta, and Pykara, from which quinine and other alkaloids were to be manufactured on their behalf. Mr. Whiffen's analysis of these yielded the following results:—

Description.	Quinine sulphate p. c.	Cinchonidine sulphate p. c.	Cinchona alkaloid p. c.
Renewed crown bark,	5.57 to 5.71	0.41 to 0.48	0.12 to 0.31
Mossed bark,	4.06 to 4.3	1.4 to 1.5	0.2 to 0.24
Natural bark,	3.6 to 3.42	1.02 to 1.21	0.15 to 0.23
Renewed red b.,	3.04	2.32	1.84
Mossed bark,	1.71 to 2.09	2.15 to 2.32	1.68 to 2.39
Natural bark,	1.28 to 1.2	2.8 to 3.57	1.14 to 1.63
Root bark,	1.3 to 2.09	2.1 to 2.15	2.39 to 2.57
Branch bark,	0.8 to 0.66	1.5 to 1.35	0.47 to 0.51
Renewed scraped crown bark,	4.34	0.37	0.21
Natural scraped,	1.81	0.75	0.06
Branch crown,	0.7	0.16	0.04

QUIVER.

The total lbs. of products obtained by manufacture was as follows:—

Quinine sulphate, . 1467	Cinchonine alkaloid, 308
Cinchonidine sulphate, 345	Febrifuge, . . . 2230
Quinidine sulphate, . 40	

Total charges on account of the bark sent amounted to £3352, 0s. 9d., distributed as follows:—

Freight, agency, etc.,	£721 9 3
Manufacturing charges,	2604 11 0
Fire insurance of bark at factory,	20 0 0

Notwithstanding the increasing price of quinine, its import into India is increasing.

	Lbs.	Rs.		Lbs.	Rs.
1875-76,	3,925	1,91,619	1879-80,	7,500	8,60,072
1876-77,	6,648	3,94,437	1880-81,	3,964	4,29,515
1877-78,	5,025	6,58,509	1881-82,	10,615	9,98,631
1878-79,	5,940	6,50,005	1882-83,	7,585	6,48,912

Imports into India of quinine on account of Government have already (1883) practically ceased, and India will soon supply all its own wants from its cinchona plantations at Darjiling and the Neilgherry mountains. In 1882-83, India exported 641,608 lbs. of cinchona bark, value Rs. 7,90,861. When the home consumption of bark was one-fourth the present amount, quinine was only half its present price. The discovery of kairin may lead to a diminution of price. In February and March 1883, the Madras Government had two sales of 48,645 lbs. of 18 kinds of cinchona bark, which realized from 8 annas 8 pie per pound to Rs. 2.8.8, the latter being for mossed crown.—*Markham, Per. Bark.*

QUINTAL. Fr., It. 1.97 cwt. Eng.

QUISQUALIS CHINENSIS. *Smith.*

Size-kiun-tsze, . . . CHIN. | Liane vermifuge, . . . Fa.

A plant of Annam, Moluccas, Mauritius, Burma, Malay Peninsula, and China; fruit 1 or 1½ inch long. A safe and efficient vermifuge.—*Smith.*

QUISQUALIS INDICA. *Linn.*

Q. villosa, *Roxb.* | Da-way-hmi-ne, *Burm.*

Tot-chi-fa, . . . CHIN. | Rangoon creeper, . . . ENG.
Chinese honeysuckle, Eng. | Sun sung aroos, MALAY.

A scandent shrub, with beautiful flowers of various colours, from white to orange and deep-red; has a very powerful perfume towards night. It grows from layers or seed, but the latter are very difficult to find. It is seen trailing its long arms around bowers and verandahs, buried in thick lively foliage, and gracefully flinging out its thousands of sweet-scented flowers, which change their tint from white to rose, and, with the clouds at sunset, deepen into richest crimson. The flowers are scarlet outside and yellowish-white within, and hang in large clusters. The scent at night is unpleasant to some persons. It is a very common plant in the gardens of the Dekhan. Seeds vermifuge.—*Jaffrey; Mason; Riddell.*

QUIVER. Throughout South-Eastern Asia the bow and arrow have almost disappeared, the only people using it constantly in war and for the hunt being the Mincopi; but at the annual 'jangar' of the Nizam of the Dekhan there are still to be seen a few soldiers in the procession armed with bows. Recently, too, in the beginning of 1870, the Editor met a small body of men, seemingly on some predatory excursion, one of whom was armed with the bow and a quiver full of arrows. In April 1863, a few days before the Editor arrived at the Andamans, a British sailor was killed by the arrow of a Mincopi.

QUOIN HILL, called Jibl Mia Ally, at the Straits of Bab-ul-Mandab, is 866 feet above the sea.

QUOIRENG, a tribe in N.E. India, with a language distinct from those of the Songbu and Puiron, but with a great similarity in all other respects. They inhabit all the hills north of the Koupui, between the high range that skirts the valley of Munnipore and the Barak, as far as the Angami tribe, from whose aggressions they have suffered much. From these aggressions and their own feuds, they have much decreased in number, but are still a very considerable tribe, possessed of much energy, which develops itself in trade with the Angami and the British frontier district.

QURBAN. ARAB. A sacrifice; a victim; oblation.

QURNA. HIND. A straight or curved horn, twelve feet long; a musical instrument.

QUTUB SAHIB, or Qutub-ud-Din, lies buried at Qutub, near Dehli, named after him. The late Shah Alam and many members of the royal family of Dehli are buried there. His tomb is much frequented by pilgrims, he being one of the most renowned and venerated of the Musalman saints.

QUTUB SHAHI, a dynasty of the Dekhan, A.D. 1512-1580, whose principal stronghold was Golconda, near Hyderabad. Sultan Kuli Qutub Shah, the founder, was a Turkoman of Hamadan in Persia, and was in the service of the Bahmani kings when their power broke up. He was murdered at the age of 90 by his son Jamshid. The fourth and last king was Muhammad Kuli.

R

R, the 18th letter of the English alphabet, is a semi-vowel and a liquid, and in the English tongue has two distinct sounds, the one, as in ran, free, morose, and when at the beginning of words or syllables, produced by an expulsion of vocalized breath; the other sound when followed by a consonant, and when at the end of words, is formed by a vibration of the tongue near the root, as in her, ford, startling. In words derived from the Greek language, the letter *h* is usually written after *r*, as in rheumatic, rhapsody, rhetoric. *R* has various modifications in the languages of the East Indies. It is changeable into *l*; and the Chinese, who cannot pronounce *r*, always use *l* in its place, though the Mongol and Manchu have *r*. Usually it has the sound of *r* in round, run, ruin. In the Hindustani it has a rough sound as *r* or *rh*, which alternate with the cerebral letters *d* and *dh*, and in Telugu, Canarese, and Tamil it has a harsher sound. The *r* of the Tamil and *r* of the Malacalam are in some respects identical, and when doubled as *rr*, have the sound of *tt*. The Sanskrit vowel sound *ri* is modified in the Peninsula of India into *ru*. *R* in Sanskrit, when compounded with another consonant, is always elided; thus, varta, krosa, preman, SANSK.; bat, kos, pem, HIND. There are many Sanskrit words written indifferently with *l* or *r*, as in the Sanskrit urml, Greek eluo; Sanskrit rak, Greek leukos; Sanskrit rik, Greek leipo. Just as the English Mary is domestically Molly, the Turki language frequently changes the letter *r* into a soft *z* or *sh*.

as the Turki words dengiz, sea, and okuz, ox, are the same as the Hungarian tenger and okut. On the Indo-Scythian coins, also, we find the Turki names of Kanishka, Huvishka, and Kushkana changed to Kanerke, Hoverke, and Korano in Greek. The *l* of the Kodum Tamil becomes *zh* in the Shen Tamil,—pallam, fruit, becoming pazham.

RA, a god of the ancient Egyptians, was worshipped separately from Osiris.

RAAMAH of Ezekiel xxvii. 22, is the modern Reima.

RABAB. HIND. A rebeck.

RABAN. HIND. A Panjab tree of moderate size; wood white, soft, light, used by agriculturists for their houses and implements. Bark used medicinally; leaves used for fodder.—*Powell*.

RABAN HORMAZ, a monastery of the order of St. Anthony, in the pashalik of Musal, 45 miles N. of Musal. The monks are of all trades. They eat meat at Easter and Christmas. Some of the cells are far up the mountains in steep places.—*MacGregor*.

RABB. ARAB. Lord, master; the Rabbi of the Hebrews. In the plural, Arab is a title of the Khalil and Mohmuud chiefs of the Peshawur district. Rab-ul-Alamin, lord of the universe.

RA-BER. PERS. On the road; properly rahbur, corrupted by the Pindara to la-bour, the designation of their forays. Literally, take to the road.—*Rajasthan*, i. p. 19.

RABI. HIND. The spring time, the months March and April; also, in Northern India, the harvest grown in winter and reaped in spring, viz. of crops sown after the rains in October and November, reaped in the first three or four months of the year ensuing. It is pronounced and written Rabbi, and called by the people Har, as the spring harvest crops sown in winter and cut by Har, early summer. They include wheat, barley, peas, grain, poppy, masur, sarson or mustard, linseed, tobacco, the manwa and radhia cotton; the arhar, Cajanus indicus; the jethi dhan, a variety of rice; kusum, Carthamus tinctorius.

RABIA. ARAB. A protector. One of the Kahtan branch of the Gara tribe accompanied a friend as Rabia from the mountains behind Dofar to the town of Silalah. On arrival there, two of Rabia's cousins approached the man he was protecting, and assailed him on account of a blood-feud. The Rabin, faithful to his charge, slew his cousins, and then sought the protection of a Syed, and got a party to convey him back to his village, while the friend he was protecting fled back to the hills. Rabia is a name of a Muhammadan woman. The favourite daughter of Aurangzeb was so called. She never married, according to Kazi Shahab-ud-Din of Ahmadnagpur, because she fell in love with Raja Saho. Her father erected a magnificent tomb over her remains at Aurangabad.—*Dr. Cantor*.

RABI-ul-AWAL and Rabi-ul-Akhir, the third and the fourth months of the Muhammadan year. The 12th day of the month is held by Muhammadans as a solemn festival, as on that day Mahomed died, 8th June 632.

RABKAB, chief village of Udaipur, a native state of Chutia Nagpur, Bengal, in lat. 22° 28' 18" N., and long. 83° 15' 25" E. Rabkab has gold mines which have their shafts sunk from 20 to 60 feet in depth. These are very close together, as

the miners are afraid to run galleries underground. The gold is separated from the soil by washing in wooden troughs. Also they cut small water-courses before the rainy season, and wash the deposit of soil carried down by the water.—*Imp. Gaz.*

RABNADAB ISLAND. Its southern extremity is in lat. 21° 50' N. It is a large island, 18 or 20 miles to the eastward of the Hooringattah entrance of the Ganges.

RACACHON or **Racachont.** **ARAB.** A substitute for chocolate; a preparation of roasted acorns, powdered with sugar and aromatics.—*Simmonds.*

RACA-VARU or **Ratsa-varu.** **TEL.** The old barons of Telingana.

RACE, a term used by ethnologists to distinguish different branches of the human family. The term is not in use amongst the Europeans in British India, by whom the people of the country are collectively called natives, and the several races castes, this being derived from *Casta*, a Portuguese word. The people themselves use the word *zāt* or *jāt*, meaning race, and distinguish their various divisions by the word *varna* or colour. These terms also indicate the religious denominations and race of the idol-worshippers and monotheists. The languages and physical conformation of the many nationalities show that the Brahman, Kshatriya, Khatri, Rajput, Vaisya, and Sudra Hindu, the Moghul, Syud, Shaikh, Persian, and Pathan Muhammadan, the Burman, Karen, Mon, Malay, Chinese, Mongol, Manchu, Papuan, and the Polynesian, the Jut, the Baluch, the Brahui, the Parsee, and the Bengali, are of varied descents, as also are many of the non-Aryan tribes of India, the Pariab, Dher, Mhar, Chakili, Mhang or Madhara, the Dom, and hundreds more. The Khatri is a race numerous in the Upper Panjab, and about Delhi and Hardwar, and found along the Ganges as far south-east as Benares and Patna. They divide themselves into three principal classes,—1. the Charjati, or four clans, viz. Seth, Marhota, Khunna, and Kuppur; 2. Barajati, viz. Chopra, Talwar, Tunnuhu, Seigul, Kukker, Mehta, etc.; 3. Bawun-jati, or fifty-two clans, amongst whom are Bundari, Meindrao, Sehti, Suri, Sani, Umud, Buhseen, Sohdi, Behdi, Teelun, Bhulleh, etc. The Rupshu people, again, are of a different race from the Bhot, and winter and summer live in their black tents with their flocks and herds of sheep, goats, and yaks. They are very ugly, with Tartar faces, and the men let their coarse black hair hang in one pigtail behind.

Amongst the commercial communities of the south of India are British, French, Parsees, Armenians, and Persian, Labbai and Moplah Muhammadans; also the entire Vaisya Hindus known as Konati and Chetty, the Marwari of North-Western India, and the Gujarati. In Central Asia the martial Lohanna are the great traders.

On the N., India has been in contact with several races, which have advanced into it and affected its ethnic character. But races may blend without the different types being effaced, and while certain exclusive or excluded castes or sequestered geographical sections of the population may preserve one type better than another, all may continue for some thousands of years to be reproduced in softened and modified forms even in the least

secluded positions. The physical characters of a race constitute the race; language is a mere acquirement. Races and languages must be classified independently of each other. Dolichocephalic and brachycephalic tribes are found among all races, nor are the peculiarities of the hair a sufficient foundation for a truly scientific classification. Friedrich Müller and Hückel, relying on trichological and glottological indications, proposed a division of the human race into 12 races, and of language into 100 families. But Lepsius showed, on the authority of A. B. Meyer, the absence of Büschelhaar among the Papuans, and the complete divergence of the grammars of the Hottentots and Papuans, which Friedrich Müller feels inclined to refer to one and the same class. Some of the races occupying the south-east of Asia have obtained their present positions as immigrants, others seem to have been thrust into them by wars, but of the origin of many of them there is no record.

The earliest political change to which we can go back in the history of the Indian Peninsula is the expedition of Rama into the forests of Dandakaranya, an event coeval with the hero-worship of the Pandava, and the myths of the Mahabharata and Ramayana. The Aryan expedition of which Rama was the leader, scattered the aboriginal races, styled Rakshasa or demons, driving some into the mountain and forest retreats, where we still find them living in barbarous freedom, and reducing others to the state of agrarian slavery in which we see the Pariab, Puller, Chamar, and other helot races residing in the plains. Each province has still its peculiar race of helots; each range of mountains and every tract of forests its own tribes of wild savages, either wholly independent, or partially subject to their more civilised neighbours in the open country. From the Pahari (undoubtedly a remnant of the great Dravidian family) of the Rajmahal Hills on the banks of the Ganges, through the extensive regions of Gondwana, embracing the Khond, Saurah, and Chenchwar of the Eastern Ghats, the Yanadi, Irular, Kurumbar (at one period apparently a numerous and powerful race) in the midland provinces, to the Bedar, Maravar, Kallar, and several tribes comprised under the general term of Malali, or mountaineers, in the south, we find an infinite succession of races professing customs and speaking languages differing, and in many instances distinct, from those of the modern Hindus. The same peculiarities may be observed in several of the homeless castes roving over the plains in the more civilised portions of the country, such as the Korchewar, Waddewar, Yerkali, Dumar, Pardi, etc. A careful and systematic investigation of these remnants of the former population, of their customs and religious observances, etc., with the preparation of copious vocabularies of the peculiar dialects or jargons in use amongst them, are among the most important objects to which attention should be directed, because the study of these tribes, of their language, manners, and customs, form nearly the only available source from which we can glean a knowledge of the earlier inhabitants of India.

The various tribes inhabiting the Indian desert and the valley of the Indus would alone form an ample subject of investigation. Near the Indus, the Soda, the Kat'hi, and the Mallani afford, in

history, position, and nominal remembrance, grounds for inferring that they are the descendants of the Sogdi, Kat'hi, and Malli who opposed the Macedonian in his passage down the Indus; swarms of Geto or Yuti have assumed the general title of Baluch, or retain the ancient specific name of Numri; while others, in that of Jut, preserve almost the primitive appellation. There are remains of the Johya and Dahya, as well as of the Gete or Jut, and Hun, who hold places amongst the thirty-six royal races of ancient India, though these, with the Baraha and the Lohana, tribes who swarmed a few centuries ago in the Panjab, are now only to be discerned in small numbers in the Marust'hali or 'the region of death,' which has even preserved the illustrious name of Kaorwa, Krishna's foe in the Mahabharata. The Sahrai, or great robber of the western desert, the enemy of all society, is also there, and the Hindu Bhatti, Rahtor, Joda, Chauhan, Mallani, Kaorwa, Johya, Sultano, Lohana, Arora, Khumra, Sindil, Maisuri, Vishnuvi, Jakhur, Shiag or Ashiag, and Poona. Of the Muhammadan tribes there are two, Kullora and Sahrai, concerning whose origin doubt exists, and the Jut, Rajur, Oomra, Soonra, Mair or Mer, Mor or Mohor, Baluch, Lumra or Looka, Sumaicha, Mangulia, Baggreah, Dahya, Johya, Kairooe, Jangurea, Oondur, Berowee, Bawuri, Tawuri, Chrendea, Khossa, Sudani, and Lohana are nyad, or proselytes, chiefly from Rajput or other Hindu tribes.

The Jut does not occupy Lower Sind, and they are not found in Gujerat. The Jut is, however, the prevailing population in all Upper Sind, and their tongue is the language of the country. They were once the aristocracy of the land, but latterly have been dominated over by other races, and thus have lost somewhat of their position as the higher classes of the society. In the south and west of the Panjab, too, they have long been subject to Muhammadan rulers. But latterly, as the Sikh, they became rulers of the whole Panjab and of the country beyond as far as the Upper Jumna, in all which territories they are still in every way the dominant population.

In the earlier ages there were two chief Rajput races in Hindustan, viz. the Surya and the Chandra, to which were added the four Agnicula,—in all six. The other races were subdivisions of the Surya and Chandra, or the Sacha of Indo-Scythic origin, who, before the Muhammadan era, found no difficulty in obtaining a place, though a low one, amongst the thirty-six regal races of Rajasthan.

The Ganges valley seems to have been peopled by several races long before the Aryan Hindus arrived there, and all the conquerors who have entered India from the north-west have striven to occupy the fertile valley of this great river. Hindu poets have celebrated its praises in a multitude of songs; the river is fabled in their mythology to be the goddess Ganga; they long to see it, to bathe in its waters and be purified from their sins, and at last to die on its banks, or to have their bones conveyed to it from the most remote parts of India. No Hindu raises such a question as in 2 Kings v. 12, for the Ganges is recognised as the most efficacious of all the Hindu sacred rivers. On its banks have dwelt the chief of the religious reformers whom India has seen. Its valley was the cradle of Buddhism, which,

from its rise in the sixth century before Christ, gradually spread over the whole of India, was extended by Aoka to Kashmir and Kābul shortly after Alexander's invasion, and now prevails amongst many millions of men. Numerous dynasties have ruled there. The Andra race was in power in the Gangetic provinces of India about the beginning of the Christian era, but the most enduring was the great Kshatriya family that long ruled at Indraprastha, and terminated with Prithiraj in A.D. 1193, when overthrown and slain by Shahab-ud-Din, Ghori.

In the northern border districts of British India, into which intruding races have come, the distinctions of nationalities are very marked. In the vicinity of Darjiling are Muhammadan and Hindu natives from the plains of India; the Bhutia from Bhutan, Tibet, and Sikkim; the Lepcha and the Mechi. The Lepcha have no religious or race distinctions, but they speak of themselves as belonging to the clans Burphung phuho, Udding phuho, Thurjokh phuho, Sundyang, Sugut, Tung-yeld, Lucksom, Therim, and Songme. Captain J. D. Herbert observes of them, that at his first interview with the Lepcha, he saw that they were the same people whom he had met with at Nialang, at Jahnabhi, at Shipchi on the Sutlej, in Hangrang, and at Lari in Ladakh. They are, in fact, the people who have been called Chinese Tartars, and of the same race as the Tibetans, being a family of the great division of Eleuth Tartars or Kalmuk.

The people of Nepal arrange themselves into many sections, viz. Gurrung, rear sheep; Gallia, rear buffaloes; Kami, blacksmiths; Sarki, tanners; Newad, shopkeepers; Domai, tailors; and the Murmi, Yakka, Mungar Brahman, Khumbhu, and Nimbu, who are principally cultivators.

In the plains of the Darjiling district, the Rajbansi and Bengali are in equal numbers. The Rajbansi are Koch or Cooch of the same descent as the raja of Koch-Bihar. Hence they call themselves Rajbansi.

The Mechi inhabit that portion of the Terai which lies under the hills. They are migratory, and live by cultivating the virgin soil; they have no caste distinctions.

In the Assam valley on the N.E., and in Cutch, Gujerat, and Kattyawar on the N.W., are many tribes disclaiming all national or race connection with each other, neither intermarrying nor partaking of each other's meals, and following different avocations, each of them assimilating in their physical appearance to the types of the races of which they are offshoots.

The inhabitants of the Archipelago form three great races, different in their physical aspect and in their moral character,—the Malay, the Papuan, and Polynesian. Ethnologists have not yet fully agreed as to their origin, nor even as to the names by which they should be designated. The Polynesian race extend from Marianna to Easter Island, and from Hawaii to New Zealand, with no greater variety in the language than is to be met with in European tongues derived from the same source. The Malay seem to have spread from Sumatra into the Malay Peninsula, and eastwards into the Archipelago, occupying much of the littoral of its more westerly islands. The physical conformation of the Papuan, and particularly the squareness of his head, distinguishes him from

the African Negro. The Papuans of New Guinea have, almost generally, the woolly hair, sometimes frizzled, and occasionally in pipe-like knots, thick lips, and squat noses; while their colour ranges from the sallow hue of the Sandwich islander to the dark copper of the Borneese. The face is suggestive of the Mongol type, being square and angular; and in many parts of the island of New Guinea the obliquity of vision common to the Chinese is apparent. Coming in all probability from one of the small western islands in the route from the north-west or the Moluccas (originally peopled from the Philippines), the Papuan race are found to spread over a large area, and extend round the Caroline Islands. Blakeland states that the geographical boundary of the Papuan is coincident with the north-west monsoon, which may be described as extending from the equator to 10° or 15° north latitude, and in longitude from Sumatra to the Fiji Islands, from which circumstance and their ignorance in navigation the inference is that they have travelled from the west into the Pacific only so far as the prevailing winds allowed.

Sturt thinks it is difficult to determine 'from what race the Australian sprang, for there is not one of the great families into which the human race has been divided with which they may be properly classed.' Strzelecki, who mixed among the Australian tribes of the greatest diversity, says: 'In his physical appearance he does not exhibit any features by which his race could be classed or identified with any of the generally known divisions of mankind.' Perhaps the most practical account is that given by Wilkes, who, in his American Exploring Expedition, says: 'They differ from any other race of men in features, complex habits, and language; their colour and features assimilate them to the African type, their long black silky hair has a resemblance to the Malay, their language approximates to the American Indians, while there is much in their physical traits, manners, and customs to which no analogy can be traced in any other people; their most striking distinction is the hair.' The Chinese, the Malay, and the Celebians have for ages visited the south-eastern islands of the Indian Ocean, and had their stations on the Australian coast, trading with the inhabitants, and conveying from thence cargoes of trepang, shells, etc.

The Mongolian, whether Scythian, Turk, or Tartar, is without imagination or strong reasoning powers, but is intrepid in danger, steady in purpose, overcoming all opposition, despising his fellows, a great conqueror. Such has been his character as long as history has recorded his name; he appears to have been made to command and to oppress. We find him in the infancy of the human race, as well as at later periods, descending from his far-distant mountains, emerging from the great deserts in Central Asia, and overrunning the most wealthy, the most mighty, or the most civilised of nations. He exercises power as his peculiar privilege and right.

The Shemite, says Layard, whether Hebrew, Arab, or Syrian, has a brilliant imagination, ready conception, a repugnance to any restraint that may affect the liberty of his person or of his intellect. He conceives naturally beautiful forms, whether they be embodied in his words or in his works; his poetry is distinguished by them, and

they are shown even in the shape of his domestic utensils. This race possesses in the highest degree what we call imagination. The best character of the Bedouin, says Burton (*Pilgrimage*, p. 44), is a gentleness and generosity. The Shemite, says Layard, shows a ready eloquence; his words are glowing and apposite; his descriptions true, yet brilliant; his similes just, yet most fanciful. These high qualities seem to be innate in him. The three great monotheistic systems which have divided the civilised world, came forth from nations of Shemite origin, among whom arose the priests or prophets of all those nations who hold the unity of God. In the south and east of Asia are representatives of those three great religions, Jews, Christians, and Muhammadans, as also a race, the Parsee, following the fire-worship, which seems to have been a corruption of the doctrines taught by Zoroaster.

Buddhists in Ceylon, in the Trans-Gangetic countries, and in those north of the great Himalaya, are very numerous, and follow several philosophies. Aryans of India, who pursue a worship of nature, of spirits, or demons, and have adopted physiological doctrines as revelations, worshipping deified mortals and heroes, and believing in many incarnations of Siva and of Vishnu, are spread all over India, and have imparted to its prior occupants a considerable acquaintance with their religious books. These prior peoples constitute the bulk of the inhabitants of British India, and have merely added on to their own nature and spirit and devil worship some of the legends and philosophical views of the Aryan Hindu; and amongst the professors of Hinduism are a multitude of sects worshipping Siva, or Vishnu, or Brahma, or all of these, or their incarnations, or the mere vikrama or idol of stone or wood or brass, with or without form. A body of religionists, the Sikh, considerable from their activity and their late political power, converts from the Jut or Gela races in the Panjab, have adopted doctrines partly obtained from the monotheistic Muhammadans, and partly from the Aryan Hindu; but though their faith is only about 200 years in existence, they too have broken up into several sects. The great mass of the Indian people are of non-Aryan origin, and follow religious rites and customs the origin of which is quite unknown.—*Tod's Rajasthan*, ii. 317; *Captain Herbert at p. 939, Gleanings of Science; Heber's Journal*, i. 195; *Mrs. Hervey, a Lady in Tartary*, ii. 5; *Gentleman's Magazine*; *Layard, Nineveh*, ii. 239; *Burton's Mecca*, iii. 44.

RACHA, also called Rachewar and Rachevadu and Rajwar, a martial race of the Northern Circars, who claim to be descendants from Kshatriya Hindus. They are a brave race, with a high sense of honour.

RACHENARA, in Coorg a sect of the lingaet religionists.

RACKA NASTA. CAN.? Stunted teak; a forest term.

RACONDA RUSSELLIANA. *Gray*. A fish of the Indian seas, from 4 to 6 inches in length. At Penang, numerous at all seasons, although less so than they are at the Sandheads and the mouths of the Ganges. The Bengal fishermen denominate the species, Potassah, Fessah or Phasah. Fessah or Phasah in Bengal is a generic term, but particularly applied to *Engraulis phasah*, *Buch.*,

and E. telarah, *Buch*. It is a heavy swimmer, and, like the rest of Clupeoidæ, expires immediately on leaving its element. It is chiefly consumed in a dried state.

RADHA, the celebrated mistress of Krishna; she was the wife of Ayana-Gosha, a cowherd of Gokal, with whom she lived within a forest near the Jumna; she was one of Krishna's favourite mistresses, the chief of the Gopi or nymphs of Vrij. She has been deified by the Hindus, and her image is set up in the temples, and worshipped at the festivals with that of Krishna, being considered an incarnation of Lakshmi. In Hindu poetry Radha occupies a prominent place. Her parents were Vrisha-bhanu and Kiritidha. She is also called Kalavati. In the Indian Song of Songs, nothing can be more graceful and delicate than the shades by which Krishna is portrayed in the gradual process of being weaned by the love of

'Beautiful Radha, jasmine-bosomed Radha,'

from the allurements of the forest nymphs, in whom the five senses are typified. As he is playing with them in the deep green wood,

'In the early days of spring,
When every wind from warm Malay brings fragrance
on its wing,'

suddenly glides Radha into the circle,

'And all among those damsels free and bold
Touched Krishna with a soft mouth, kind and cold;
And like the others leaning on his breast,
Unlike the others left there Love's unrest;
And like the others joining in his song,
Unlike the others made him silent long.'

she leaves in him the sense of a trouble, of a longing, which all the blandishments of his wood-nymphs cannot soothe away. He bids farewell to his more earthly pastimes:—

'We will play no more, beautiful shadows!
A fancy came solemn and sad,
More sweet with unspeakable longings
Than the best of the pleasures we had:
I am not now the Krishna who kissed you;
That exquisite dream,
The Vision I saw in my dancing,
Has spoiled what you seem.'

He is shamed and penitent at having declined upon a lower passion from an affection once within his reach, so infinitely more complete.—*Arnold*.

RADHA, wife of Duryodhana's charioteer, and nurse of Kerna, whom she reared as her son, after he was exposed on the banks of the Yamuna by his own mother.—*Tr. Hind.* i. p. 34.

RADHA-KUND, four miles from Govardhan, the hoary and holy mount connected with the richest associations of the Hindus, and beheld by them with an absorbing interest. The Greeks had their Olympus, and the Hebrews their Sinai; the Jain sect have their Parasnath, the Saiva Hindu their Kailasa, and the Vaishnava Hindu their Govardhan. The Christian pilgrim to Judea sees Bethlehem and Jerusalem, and then goes to Sinai. The Vaishnava pilgrim in Vrij sees Muttra and Brindaban, and then goes to Govardhan. Govardhan is the Parnassus of the Hindus. Indeed, taking Krishna for Apollo, the Gopini for the Muses, and the Mans-ganga—a large, beautifully infaced tank—for the fount of Castalie, it out and out justifies the comparison. The especial holiness of Govardhan is owing to

its being the first scene of Krishna's apotheosis. It was upon this mount that the first image was raised to his worship under the name of Govardhannath. The great annual mela or religious fair of Ana-kut at Govardhan, first instituted by Vallabha, generally takes place in the month of Kartika, and not less than a hundred thousand people assemble. It celebrates a pastoral incident in the life of Krishna, and throughout all Vrij the horns of the cattle are painted red with vermillion, and those of a cow are occasionally seen covered with silver leaf. Radha-Vallabhi is the name of a sect of Vaishnava Hindus, literally the lord and lover of Radha, whose worship is paid to Krishna on account of his favourite mistress Radha. Radha is the object of adoration to all the sects who worship that deity, and not unfrequently obtains a degree of preference that almost throws Krishna into the shade. This sect was founded at Brindaban, in the 16th century, by Hari Vans. Radha Vallabhi are two Sanskrit words, from Rad'h, to accomplish, and Vallabha, beloved. Mr. Sherring, however, says the Radha-Vallabhi were founded by Vallabhacharya, and worship Krishna and Radha conjointly. They profess high ceremonial purity, do not eat fish or flesh, nor drink spirits, and worship Krishna frequently during the day, but taking great interest in all tales of the lila or sports of Krishna and the Gopins. They are termed Jhanki. They are burned when dead.—*Tr. of Hind.* ii. p. 111; *Sherring's Castes*, p. 251.

RADHANPUR is held by the Babi family, who, since the reign of Humayun, have always been prominent in the annals of Gujerat. It is stated formerly to have been in the possession of the Waghele, and to have been called Lunawara, after Waghele Lunaji of the Sardhara branch of that tribe. The first Babi entered Hindustan in the company of Humayun. Bahadur Khan Babi was appointed Faujdar of Tharad in the reign of Shah Jahan; and his son Sher Khan Babi, on account of his local knowledge, was sent to aid Prince Murad Baksh in the government of Gujerat. It is a native state in the Bombay Presidency, lying between lat. 23° 26' and 23° 58' N., and long. 71° 28' and 72° 3' E. The area comprises 150 villages in an area of 833 square miles, and has a population numbering (1872) 91,579, of whom 11,003 are Musalmans, and the rest Hindus.—*Imp. Gaz.* v. p. 11.

RADHI, a division of the Gaur Brahmana.

RADHOTSAVAM. TEL. Annual feast in honour of each local Hindu deity. It is a fair.

RAD-i-KUFR, part of the Muhampadan creed. Rad means repulsion, resistance, refutation. See Kalamah.

RADISH, *Raphanus sativus*.

Var. *a. radiculata*; *var. β. niger*.

Hung-lo-p'eh, . . . CHIN.	Lohak, . . . MALAY.
Mull, . . . DUKH.	Mulaka, . . . SANSK.
Rave, Radis, . . . FR.	Rabano, . . . SP.
Radieschen, . . . GER.	Mulinghi, . . . TAM.
Mars, . . . GUJ.	Turp, . . . TURK.
Ravanello, . . . IT.	

This vegetable may be sown at the commencement of the rains, either in beds broadcast, or on ridges of beds where other vegetables have been planted. In the rainy season they grow better on the ridges. The seed should be trodden in or beaten down, and then a good watering given to

them. When about 3 inches high, carefully thin, leaving at least a space of five fingers' breadth between each plant. They take from three to five weeks to come to perfection, and require a good share of watering. The turnip radishes are of various colours,—white, red, Spanish black, round, purple; also long white, red, and purple. The red, white, pink, and purple turnip varieties succeed best on the plains, the black Spanish *R. niger* is of little value; the seed-pods when young make excellent pickles. The horse-radish is *Cochlearia armoracea*, *Linn.*—*Riddell; Jaffrey.*

RAE, Rae-Raian, Rao, Raja, Maharaja, Rana, Maharana, are Hindu titles.

RAEEN, a tribe following Muhammadanism in the Panjab, who are said to have come from Sind and Jeysulmir. They are skilful cultivators; they dress as Hindus. They are politically insignificant, but are to be found in the vicinity of all great cities. Unrivalled as market gardeners, they carry on an elaborate and perfect cultivation.

RAFAL, an order of Darvesh in Muhammadan countries. In Egypt they let their hair grow long, and dress in long-skirted outer coats. In their religious ceremonial services, called *zikr*, they whirl round and round, sway their heads to and fro, proclaim aloud the name of God and his unity, Allah, Allah, and exclaiming *La illah il Allah*, as they whirl round with a velocity such as to extend the garment with centrifugal force. In their services, the *zikr* occasionally become ecstatic or malbus, and occasionally epileptic seizures occur. From their cries, Europeans have styled them the Howlers, but their religious services are such as are alluded to in 1 Samuel x. 5-11. See Majzub; Malbus; Zikr.

RAFFICKEE, a plant; from the fibres of its bark the Lepcha near Darjiling make remarkably light and strong fishing-nets.

RAFFLES, Sir THOMAS STAMFORD, author of the History of Java, Lond. 1817, 2 vols. 4to, and other valuable works on the Malay Peninsula. He was one of the most remarkable of the many distinguished men who have risen from the ranks of the East India Company's Civil Service. He was the founder of Singapore, and one of the best and most astute of the governors of smaller Eastern British dependencies. He was born at sea near Jamaica, on the 5th of July 1781. From his infancy he was accustomed to an adventurous life. His father, Benjamin Raffles, was one of the oldest captains in the trade of those seas out of the port of London. Placed at an early age at a school in Hammersmith, at fourteen he was placed as an extra clerk in the East India House, but he did not abandon learning. His leisure hours were never idle; and when, in 1805, the Court of Directors resolved on consolidating the establishment at Penang, he was named Assistant-Secretary, and towards the close of that year he arrived in the Indian Archipelago. Whilst the whole E. Archipelago was under British domination, he was Governor-General, and resided near Batavia from 1811 to 1816, and from 1818 to 1824 he was Governor of the British possessions of Sumatra. During his visit to London, before coming to Sumatra, he founded the Zoological Society, and was its first president, and he began the Zoological Gardens. When he sailed from Bencoolen, the ship took fire when about 50 miles from land, and all his official and private

documents, all the living and mounted animals of Sumatra, were destroyed. Lady Raffles, his widow, wrote a memoir of her husband. She was the second wife of Sir Stamford, to whom she was married in 1817. Her maiden name was Sophia Hull; she survived her husband 22 years, and died on the 12th of December 1858, aged 72, at Highbury, near Hendon, Middlesex, an estate purchased by Sir Stamford shortly after his return to England in 1824.—*St. John's Indian Archipelago*, ii. p. 44; *Bikmore*, p. 488.

RAFFLESIA, a genus of stemless parasitical plants of the natural order Rafflesiaceæ. In Sumatra and Java the species known are *R. Arnoldi*, *R. Patma*, *R. Cumingi*, *R. Horsfieldii*, *R. Rochussenii*, all deemed to have astringent and styptic properties. *R. Arnoldi*, *R. Br.*, is a gigantic parasite, growing upon the stems of some of the vine order, *Cissus angustifolia*, in Sumatra. The flower measures from 3 feet to 3 feet 6 inches, and weighs 14 lbs. It was discovered by Dr. J. Arnold in 1818, on Sir Stamford Raffles' first journey from Bencoolen into the interior of Sumatra. Writing from Sumatra, on the Manna river, he says: 'One of the Malay servants came running to me with wonder in his eyes, and he pointed to a flower growing close to the ground under the rushes. The whole flower was of a very thick substance, the petals and nectary being but in few places less than a quarter of an inch thick, and in some places three-quarters of an inch; the substance of it was very succulent. A swarm of flies was hovering close to the mouth of the nectary, and apparently laying their eggs in the substance of it. It had precisely the smell of tainted beef. It measured a full yard across, the petals being 12 inches from the base to the apex. The nectarium could hold 12 pints; and the weight of this prodigy we calculated to be 15 lbs.'—*Dr. Joseph Arnold; Jameson, Ed. Journ.*

RAFU. HIND. Darning. Rafu Karna, to darn; Rafu Kari, darning. Rafugar, a needle-worker who darns and joins shawls, etc., with the utmost delicacy.

RAFZI. ARAB. The Shiah Muhammadan sect, regarded by the Sunni sect as heretics. See Shiah.

RAG. HIND. A vein; a flaw in a precious stone.

RAGA. HIND. A melody, a piece of music; in Hindu mythology, the Hindu modes, or melodies personified, six or more in number, and the Ragini are their consorts.

RAGA. MALAY. A basket, a grain measure of the Sulu and Sunda Isles, in weight 534 lbs.

RAGHA, in Northern Media, the eleventh settlement of the Aryans (xii. verse 16). Ragha with the three races is doubtless the Rhagæ of Strabo and Ptolemy, the greatest city in Media, south of Teheran. This north-eastern portion of Media includes the passes of the Caspian. The possession of these passes was a protection to the other Aryans, and at the same time the key to the whole of Media, and therefore Persia. The district is called also Choana (Qwan). Ahriman established here unbelief in the spiritual supremacy of Zarathustra,—another schism, or at all events another portion of ancient Aryan history. See Aryan.

RAGHAVA, a name of the Rama Raghava Vilasa, a poem by Viswanatha on the life of

Rama. Viswanatha also wrote the *Sahitya Darpana*.

RAGHAVANSA, a celebrated poem by Kalidasa on the life of Rama. It is in 19 cantos, and has been translated into several of the European languages.—*Dowson*.

RAGHAHA-PANDAVIYA, a modern poem by Kavi Raja, which is in high repute, celebrating the actions of Raghava, a name of Rama. It recounts at once in the same words the stories of the Ramayana and of the Mahabharata, and the composition is so managed that the words may be applied to Rama or the Pandavas.

RAGHUGARH, native state in Malwa. The Chauhan Rajputs of Raghugarh are known by the name of Kychi, and are one of the oldest families in Malwa. In 1780, Madhojee Sindia stripped the family of their possessions, and imprisoned the Raja Bulwunt Singh and his son Jye Singh. Jye Singh maintained the war with Sindia till 1818, when he died, leaving his title to be disputed by two claimants, Dhokul Singh and Ajit Singh. The matter was complicated by disputes in the family, and at last, in 1843, with the consent of the British Government, arrangements were made, and Chuttersal got 32 villages, yielding 9000 rupees. Ajit Singh received 120 of the 204 villages originally granted to his family.

RAGI, Eleusine coracana, and Savi, Panicum miljaceum, millets, will produce something anywhere, but the quantity of produce is exactly in the ratio to the goodness of the soil. Ragi pays tolerably even on the black soil which cannot be given to rice, on account of its situation not permitting the water to rest upon it.—*Dr. Marshall*.

RAGINI, music. In Hindu mythology, the thirty Ragini, or female passions, are the nymphs of music.—*As. Res.* i. p. 264.

RAGONATH RAO, also called Ragoba, the second son of Baji Rao, the first Peshwa. He was at one time much connected with the British, and was the father of the last Peshwa.—*Elphinstone*, p. 640.

RAGS.

Lompen, Voden, . . .	DUT.	Strasci, Strazze, . . .	IT.
Chiffes, Chiffons, . . .	FR.	Tampal, parcha, . . .	MALAY.
Drilles, Drapcaux, . . .	"	Farropos, Trapos, . . .	PORT.
Lumpen,	GER.	Trepje, Trebje, . . .	RUS.
Chondi,	GUJ.	Tropos,	SP.
Chendi,	HIND.	Andrajos, Haropos, . . .	"

Rags are used in the manufacture of paper. Rags and other paper-making materials are exported from India annually, value Rs. 1,72,114.

RAH. PERS. A road. Rah-dari, a guide. Razhan, a highway robber.

RAHAL. ARAB. A camel-load, about five cwt. Rahil, a traveller. Rahilah, a caravan.

RAHAN. BURM. A perfected Buddhist saint; a Phoungye, a Talapoin.

RAHASYA. SANSK. A mystical doctrine.

RAHAT. KONKAN. The Persian wheel; also a spinning-wheel.

RAHIM. ARAB. Merciful, an attribute of the deity.

RAHLAT. ARAB. Departure by death. Muhammedans speak of Rahlut Farmana, to take a journey; Intikal Karna, to make a change; and Guzz-jana, to pass away.

RAHT, the country of the Chauhan Rajputs in the state of Ulwar.

RAHTOR or Rhator, a dynasty originally of Kanouj, afterwards continued in Marwar. They commence authentic history in A.D. 300? by Yavanaswa, prince of Parlipur, supposed of Indo-Scythic origin. In A.D. 1381, Chonda assaulted Mandor, and made it his capital. In 1680 was murdered Ajit Singh, in whose reign occurred the Rahtor conflict at Delhi, 4th July 1679 (7th Sraavan. S. 1716), and the thirty years' war against the empire. He was murdered by his son. The Charan are the sacred order of the Rahtor country; the warlike tribes esteem the heroic lays of the bard more than the homily of the Brahman, and they hold lands, literally, on the tenure of 'an old song.' In Colonel Tod's time, the genealogical roll of the Rahtor was about 50 feet in length, commencing as usual with a theogony, followed by the production of the first Rahtor from the spine (raht) of Indra, the nominal father being Yavanaswa, prince of Parlipur. Of the topography of Parlipur, the Rahtor had no other notion than that it was in the north. The genealogies trace their pedigree to Kush, the second son of Rama, consequently they would be Suryavansa. But by the bards of this race they are denied this honour; and although Kushite, they are held to be the descendants of Kasyapa of the Solar race, by the daughter of a Dye (Titan). The progeny of Hirna Kasyapa is accordingly stigmatized as being of demoniac origin. They, however, succeeded to the Lunar race of Kushnaba, descendants of Ujamida, the founders of Kanouj. Indeed, some genealogists maintain the Rahtor to be of Kusika race. The first locality of the Rahtor was Gadhipura or Kanouj, where they are found enthroned in the 5th century; and though beyond that period they connect their line with the princes of Kosula or Ayodhya, the facts rest on assertion only. In the period approaching the Tartar conquest of India, we find them contesting with the last Tuar and Chauhan kings of Delhi, and the Balica-rae of Anhilwara, the right to paramount importance amidst the princes of India. The combats for supremacy destroyed them all. Weakened by internal strife, the Chauhan of Delhi fell, and his death exposed the North-West frontier. Kanouj followed; and while its last prince, Jye-Chand, found a grave in the Ganges, his son Seoiji sought an asylum in Maroost-bulli, the regions of death. Seoiji was the founder of the Rahtor dynasty in Marwar on the ruins of the Purihara of Mundor. Here they brought their ancient martial spirit, and a more valiant being exists not than can be found amongst the sons of Seoiji. The Moghul emperors were indebted for half their conquests to the Lakh Talwar Rahtoran, the 130,000 swords of the Rahtor. In less than three centuries after their migration from Kanouj, the Rahtors, the issue of Seoiji, spread over a surface of four degrees of longitude, and the same extent of latitude, or nearly 80,000 miles square. The Rahtor has twenty-four sac'ha. The Rahtor of Bikanir are unchanged in their martial qualifications, bearing as high a reputation as any other class in India. The Rahtor of the desert have fewer prejudices than their more eastern brethren; they will eat food without inquiring by whom it was dressed, and will drink either wine or water without asking to whom the cup belonged. They would make the best soldiers in the world if they

would submit to discipline, as they are brave, hardy, easily satisfied, and very patient; but in the inordinate use of opium, and smoking intoxicating herbs, are said to exceed all the Chatis Rajkula, the thirty-six royal tribes of India. The piala or cup is a favourite with every Rajput who can afford it, and is, as well as opium, a panacea for ennui, arising from the absence of all mental stimulus, in which they are more deficient, from the nature of the country, than most of their warlike countrymen.—*Tod's Rajasthan*, ii. pp. 115, 196, 242; *Thomas' Prinsep*, p. 258.

RAHU. **HIND.** A large fish of the Ganges, which attains to upwards of 25 lbs.

RAHU, in Hindu astronomy, the moon's ascending node. The word is derived from a verb, literally meaning to abandon, void, hence also black, darkness, shadow, etc., and is represented in Hindu mythology as having no body, the umbra of the astronomers. The umbra may be said to devour, as it were, the luminaries. In a physical sense the Hindus consider it as one of the obscure planets, which occasion eclipses; but, according to their mythology, Rahu is the head of a monster, of which Ketu, the descending node, is the trunk. It is supposed by some commentators to be the Typhæus of Hesiod. Rahu is fabled to have been translated to the stellar sphere, and became the author of eclipses by occasionally swallowing the sun and moon. The origin of the hostility of Rahu to the sun and moon is this: When the gods were drinking the amrita produced at the churning of the ocean, Rahu, a demon, assumed the form of a god, and began to drink, when the sun and moon, in friendship to the gods, revealed the deceit. His head was then cut off by Vishnu, but, being immortal by having tasted the amrita, the head and tail retained their separate existence, and were transferred to the sky. The head became the cause of eclipses by its animosity to the sun and moon, and the tail became Ketu, or the descending node. 'And now thou fall'st a prey to death, like the full moon to Rahu's jaws consigned.'—*Williams' Nala*, p. 209; *Wilson, Malati and Madhava*, p. 115. See *Graha*; *Ketu*.

RAHULA, son of Sakya the Buddha.

RAI, a town in the pashalik of Baghdad, in Irak-i-Ajam or Turkish Arabia, the birthplace of Razi. See *Razi*.

RAI BARELI, in Oudh, a town which gives its name to a revenue division comprising the districts of Partabgarh, Rai Bareli, and Sultanpur. The town is situated on the banks of the Sai, 48 miles south-east of Lucknow, in lat. 26° 13' 50" N., and long. 81° 16' 25" E. The population of the division is about three millions. Brahmans form the most numerous caste, next come the Ahir, Chamar, and Kahatriya.

RAICHORE, a town and a doab or mesopotamia in the centre of the Peninsula of India, in the dominions of the nawab of Hyderabad. The doab has an area of 6600 square miles, and a population of 500,000.

RAI DAS, founder of a Hindu sect called Rai Dasi. It is a sect of Vaishnava Hindus. Rai Das was originally a Chamar, one of the aboriginal tribes of India, who are labourers, leather workers, shoemakers, and in Ch'hattigarh, largely farmers. His religious views were in accordance with the doctrines of Ramanand, and his followers are

known as the Rai-das Panthi, Rai Dasi, and Sad'h Nami. Throughout India there is no more despised race than the Chamar. In the distribution of occupations, nothing has been left for them but the, in Hindu eyes, degrading handicraft of skinning dead cattle, which is so insufficient for their numbers, that the great majority of them are driven to earn their bread from hand to mouth by ill-paid day-labour. In the great isolated plain of Ch'hattigarh, where the jungle has not even yet been thoroughly mastered by man, hands cannot be spared from agriculture simply to gratify social prejudices, and the Chamars, who make up some twelve per cent. of the population, are nearly all cultivators.

The creed adopted by them is the Sad'hnamism or Rai Dasi, a branch of one of the most celebrated dissenting movements in Indian religious history, namely that of the Ramanandi. No images are allowed; it is not even lawful to approach the Supreme Being by external forms of worship, except the morning and evening invocation of this holy name (Sad'hnam), but believers are enjoined to keep him constantly in their minds, and to show their religion by charity. Even if the creed be weak as a moral support, it is strong as a social bond; and, no longer weighed down by a sense of inferiority, the Sad'hnamis hold together, and resist all attempts from other castes to reassert their traditional domination over them. They are good and loyal subjects.—*Wilson's Religion of the Hindus*, i. p. 113.

RAIDRUG, a town in Bellary district, Madras, in lat. 14° 41' 50" N., long. 76° 52' 50" E.; population (1871), 7729. Consists of a citadel and lower fort, the latter containing the town, which is regularly laid out. The lower fort is guarded by a triple line of works, and a narrow pathway hewn in the rock leads from it to the citadel. At intervals along this path are gateways of solid masonry and fresh lines of fortification. The earlier Palegars of Raidrug were of the Boya race.—*Imp. Gaz.*

RAIGAR, in Mherwara, workers in skins and leather, also labourers.

RAIGARH, an old chiefship or native state now attached to the Sumbulpore district of Central India. It lies between lat. 21° 45' and 22° 35' N., and long. 83° and 83° 35' E., and is bounded on the north by the native states of Sirguja and Gangpur under Chutia Nagpur, on the south by the river Mahanadi and the Sumbulpore khalsa, on the east by the zamindari of Jeypore or Kolabira, on the south-west by the zamindari of Chandrapur, and on the north-west by the feudatory state of Sakti under Bilaspur. The principal castes are agricultural,—Kolts, Agharia, Kanwar, Saonra, Gond, and Bhumiya; besides Brahmans, Rajputs, Mahanti, with a fair proportion of artisans. A chief of Raigarh, as a reward for his fidelity and services, was declared to be under the special protection of the British Government. Population in 1872 was 63,304.

RAIIDÆ, a family of plagiostomous cartilaginous fishes, of which the common ray is the type.

RAIL, the Rallidæ, a family of birds. Of the short-winged rails unable to fly are the Weka rail of the Pacific islands, the *Ocydromus Australis*; Earle's Weka is *O. Earlei* of New Zealand, *O. sylvestris* is the wood-hen of Lord Howe's

RAILS.

island, and O. Lafresnayanus is the N. Caledonia rail.

RAILS and pondhi or cisterns were frequently constructed by the Buddhists of India in connection with their religious structures. The former have in many instances disappeared. They were erected round sacred trees, pillars, and temples. A beautiful specimen of one is at Sanchi. The cisterns were cut in the rock near the cells of the mendicants, and were fed by small channels, also rock-cut, obviously for the purpose of supplying the monks with one of the necessities of life.—*Fergusson*.

RAILWAYS were first attempted to be introduced into India in 1845, by two companies, termed the East India and the Great Indian Peninsular Railway Company, but the projectors found it necessary to apply to Government for aid, and Government guaranteed 5 per cent. for a term of 99 years, giving the land. Sir Macdonald Stephenson, a civil engineer of Great Britain, in 1843 had suggested railways for India, during the administration of Lord Ellenborough, and Mr. Bird, his successor, took up the subject. It was not encouraged either by the Court of Directors or the London mercantile community. Subsequently, during Lord Hardinge's administration and on his recommendation, the Court of Directors granted the land for a line from Calcutta to Delhi, with a guarantee of 4 per cent. of interest on five millions sterling, and this was the first of the guarantees which have since been extended to canals, irrigation channels, and other railroads. The first to progress were the East Indian and Great Indian Peninsular Railways, when contracts were signed in August 1849. During Lord Dalhousie's administration, the railway schemes made progress, and on the 18th November 1852, Bombay saw the first passenger train run. On the 20th April 1853, Lord Dalhousie, in a minute, urged their extension for strategic purposes, and on political and commercial grounds, and he mapped out certain trunk lines.

In 1880, the railways were as under:—

Indian, runs up the valley of the Ganges from Calcutta (Howrah) as far as Delhi, with a branch to Jubbulpur; (2) the Great Indian Peninsula, which starts from Bombay, and sends one arm north-east to Jubbulpur, with a branch to Nagpur, and another south-east to the frontier of Madras; (3) the Madras line, with its terminus similarly at Madras city, and two arms running respectively to the Great Indian Peninsula junction at Raichore, and to Beypur on the opposite coast, with branches to Bangalore and Bellary; (4) the Oudh and Rohilkhand, connecting Lucknow and Moradabad with Cawnpur and Benares; (5) the Bombay, Baroda, and Central India; (6) the Sind, Panjab, and Delhi, consisting of three sections, one in Lower Sind, another from Delhi to Lahore, and the third from Lahore to Multan; (7) the South Indian; (8) the Eastern Bengal.

The Indus Valley Railway starts from a point six miles west of Multan on the Panjab Railway, and runs through Shujabad and Bahawalpur to Sukkur, and thence to Kotree.

The most important engineering works connected with Indian railways were on the Thul Ghat, by an incline of nine miles and a quarter, in the course of which the northern branch of the

RAILWAYS.

G. I. P. Railway attains an elevation of 972 feet. The southern branch is taken through the mountains of the Bhor Ghat, by an incline nearly 16 miles long, with a total elevation of 1831 feet, by a series of cuttings, tunnels, viaducts, and embankments, which are only rivalled by those on the Thul Ghat.

The most important section, completed in 1870, was from Sobagpur to Jubbulpur on the G. I. P. line, by means of which railway communication between Bombay and Calcutta was established. Next in importance was the completion of the Sutlej bridge, by which Lahore and Delhi were joined. The year 1871 saw Bombay city joined to Madras by the linking together of the Madras and the G. I. P. railways at Raichore. Thus the system of trunk lines, originally laid down by Lord Dalhousie, may be regarded as completed. Commencing at Negapatam, the most southern terminus of the present Madras system, and proceeding by Bombay, Jubbulpur, Allahabad, and Lahore to Multan, on the Indus, a continuous length of about 2800 miles of railway was formed.

The cost of the several Indian lines varied considerably. The East Indian, 1508 miles, including 410 of double line, cost £20,000 per mile; the Great Indian Peninsular, 1280 miles, including 325 miles of double line, cost £18,860, and the Bombay and Baroda cost £18,720; but the Madras line cost only £12,300, and the narrow gauge South Indian £6780. The guaranteed companies have raised £97,173,822.

The eight great lines may be thus shown, viz.:—

	Mileage open.	Passengers.	Goods and Minerals.—Tons.	Gross Receipts.
GUARANTEED.				
East Indian,	1508	1,988,215	414,173	£22,481
Eastern Bengal,	547	2,439,463	801,815	465,515
Oudh and Rohilkhand,	663	4,160,179	951,674	1,187,722
Sind, Panjab, & Delhi,	861	4,003,012	609,066	564,900
Madras,	638	4,477,655	158,040	341,127
South Indian,	1288	4,751,943	1,154,214	2,287,982
Great Indian Peninsula,	421	6,237,074	627,995	755,784
Total,	4577	28,050,745	4,876,877	£5,984,861
STATE.				
East Indian,	1504	8,081,828	3,471,109	3,936,635
Calcutta and S.E.,	28	595,803	31,034	14,210
Nalhati,	27	135,091	9,836	6,992
Northern Bengal,	244	705,707	123,154	144,930
Tirhut,	85	475,377	74,143	45,292
Patna-Gya,	57	519,696	54,560	48,156
Panjab Northern,	180	1,849,790	273,550	336,828
Indus Valley,	490	1,364,425	505,919	647,266
Kandahar,	93	7,125	...	...
Multra-Hathras,	29	322,478	92,247	13,622
Cawnpur & Farakhabad,	2	7,125	35	220
Dildarnagar & Ghazipur,	3	...	...	...
Rajputana,	2	2,044,823	298,118	372,372
Western Rajputana,	554	486,873	77,909	65,010
Sindia,	67	214,266	37,045	31,436
Sindia-Nemuch,	142	1,129,508	138,918	140,148
Holkar,	86	...	...	...
Bhavnagar-Gondal,	8	...	...	...
Patri,	22	...	...	...
Gackwar of Baroda's,	48	...	...	...
Khamgaon,	8	25,408	15,484	2,787
Anraoli,	6	71,166	23,111	5,087
Wardha Coal,	46	70,423	42,471	21,444
Wizam's,	121	327,469	80,805	70,271
Dhond-Manmad,	146	311,938	71,846	60,610
Nagpur & Chhattisgarh,	50	139,068	107,460	10,395
Rangoon and Irawadi Valley,	163	1,112,424	112,806	132,271
Total,	4213	19,990,105	5,576,860	£6,114,732
GRAND TOTAL,	8790	48,040,849	10,453,137	£12,099,593

RAIN.

RAIN.

Matar,	ARAB.	Piaggia,	IR.
Mo,	BURM.	Iluvia,	SF.
Pluie,	FR.	Mui,	TAM.
Regen,	GER.	Yaghmur,	TURK.
Barrat,	HIND.		

The occasional showers which fall throughout the year in Britain are unknown in most countries in S. Asia, and the first particular to attend to in examining their climates in connection with their agriculture, is the season and the quantity of the periodical rains. It is these which regulate husbandry, and on which the temperature and succession of the seasons in a great measure depend. The globe is wrapped in a layer of air about 40 miles high; and the manifold climates of the world are caused by the mutual relations of this layer of air and sea and land; and the changes of weather, heat and cold, drought and rain, cloud and sunshine, calm and tempest, all depend upon the movements into which it may be thrown. When its temperature is lowered, the moisture in the air falls in rain, hail, or snow. In the tropics the sun's rays fall more vertically on the air than elsewhere, and its rarefied particles constantly rising form a column ever moving towards the poles. To fill the vacuum thus caused, the denser air from the frozen poles rushes down over the surface of the globe towards the equator, and hence result the great polar and equatorial air currents, the direct courses of which, between the poles and the equator, are bent by the revolution of the earth on its axis, in the northern hemisphere into the north-east, and in the southern into the south-east trade-winds or vents alises. 'The wind goeth towards the south, and turneth about unto the north, it whirleth about continually, and returneth again according to its circuits.' The land becomes hotter and hotter more quickly under the sun's rays than the sea does, and the consequence is that when the sun becomes vertical over any portion of the land it draws the surrounding air to a focus there; and in this way in every latitude the great primary world-winds and rains are broken into secondary or local winds and rains, producing the differences in nature and time of the climates which prevail over the globe. Owing to the excess of land in the northern hemisphere, the constant belt of rain, where it exists between the trades, instead of corresponding with the equator, lies a little to its north, and the moisture gathered by the south-east trades only falls in rain when it reaches the tropic of Cancer, thus compensating the northern hemisphere for its want of evaporating surface. Similar modifications and compensations on a smaller scale occur in regard to each of the trades separately, as the sun successively traverses the north and southern ecliptic.

In the tropical zone, the chief rainfall season occurs shortly after the sun attains its greatest altitude; so that on and near the equator there are, as a rule, two seasons of maximum rainfall, and in the vicinity of the tropical circles the chief rain falls in the later summer months. In India, owing to its forming the southern extremity of a continent which extends far into the tropical zone, the periodical rainfall extends far to the north of the tropic of Cancer, with all its characteristic tropical features.

In the greater part of extra-tropical India, the rains of the later winter months, although much

RAIN.

less copious, are scarcely less important to agriculture than those of the summer monsoon. This remark is especially applicable to the Panjab, the N.W. Provinces, and the Northern Dekhan. The cause of these winter rains of India is not well understood. They are supposed by Mr. H. F. Blandford to be brought from the sea by temporary winds.

In Assam and Bengal, and to a certain extent in the lower part of the N.W. Provinces, and in the Central Provinces to the east of Nagpur, as well as in the Peninsula farther south, some rain falls in the spring months. In the greater part of India proper these spring rains fall chiefly in little local storms, occasionally in the form of hail, but in Eastern Bengal and Assam the fall is more abundant and continuous. It begins in the latter part of March, and becomes more frequent and copious in the subsequent months, so that it eventually assumes the character of the monsoon rains; and it may be said that in the provinces of Eastern Assam and Bengal the monsoon rains set in six weeks or two months earlier than in the more western provinces. Lastly, in the Carnatic, the principal rainfall occurs at the close of the summer monsoon. But while the rains of this monsoon are falling heavily in N. India and on the west coast of the Peninsula, the plains of the Carnatic receive but a few occasional showers; and it is not until October, by which time the rains are over in Northern India and have almost ceased in Bengal, that the monsoon wind of the Bay of Bengal recurves, and, blowing as an east and north-east wind on the coast of Madras, carries to that part of the Peninsula the heaviest rain of the year. The amount of rain is very different in different parts of India, more so than in any other parts of the world. If it were equally distributed over the whole country, it would, omitting Lower Bengal and Assam, form a sheet of water about 35 inches in thickness (average rainfall 35 inches). In some parts of Cherrapunji the annual fall amounts to 400 inches; while at Jacobabad and Sehwan the average does not exceed four or five inches, and in Sehwan in 1880 it was less than one inch. In the southern slopes of the Himalayas it is about 75 inches, while in Western Rajputana, Sind, Cutch, and the Lower Panjab, it averages less than 15 inches in the year. In the western half of the Dekhan, on the Mysore plateau, and in the zone of country extending from Gujerat up the Aravalli mountains through Eastern Rajputana and the Gangetic Doab to the Panjab, the rainfall varies from 15 to 30 inches. But on some parts of the Western Ghats, as at Mahabaleswar and Matheran, the annual average is not less than 250 inches; while within a few miles to the eastward the rainfall rapidly diminishes, so that at Poona it is only 31 inches, and the Western Dekhan plateau, which stretches away to Sholapur and beyond, has less than 30 inches.

On the N.W. frontier of British India, including the southern half of the Panjab and all Sind, there is an arid region, where the normal annual rainfall is less than 15 inches, and irrigation is indispensable to cultivation. It embraces the area between lat. 23° and 33° N., and from the mountains of Baluchistan in long. 60° across the Indian desert to near Lahore on the north, Delhi in the east, also Ajmir, the Aravalli mountains, and the Runn of Cutch on the south. On the N.E., E., and S.E. of that arid region is a belt of scant

RAIN.

rainfall from 100 to 200 miles wide, embracing the Safed Koh (14 in.), Lahore (16 in.), Dehli (24 in.), Agra (27 in.), Ajmir (18 in.), and Kattyawar, on which between 15 and 30 inches annually fall. And farther south, in the interior of the Peninsula, in the elevated tract from 1200 to 2400 feet above the sea, between the Eastern and Western Ghats, at a distance from the two seas, and extending from Nasik on the north to Cape Comorin, is a dry region with a rainfall of from 20 to 30 inches, embracing Bellary (22 in.), Bangalore (35 in.), Palamcottah (22 in.).

Along the upper part of the valley of the Ganges, in Central India, and on the eastern coast of the Peninsula, the rainfall ranges from 30 to 60 inches. In the deltas of the Ganges and Mahanadi, rain falls to the extent of 60 to 75 inches, and along the western coast of the Peninsula of India, between the Syhadri mountains and the sea, also on the southern slopes of the Himalaya, along the valley of the Brahmaputra, in Arakan, and the delta of the Irawadi, the rainfall ranges from 60 to over 200 inches.

The chief fall occurs between May and October while the S.W. monsoon is prevalent, except on the S.E. part of the Madras coast, where heavy rains fall from October to December while the N.E. monsoon blows, and showers occur from Christmas time to February in most parts of India. On the Western Ghats and in the tract between them and the sea, the fall is from 70 to 100 inches, and as much as 250 inches on the west face of the mountains. Along the east coast of the Bay of Bengal, in the eastern districts of the Bengal Presidency, and along the foot and outerslopes of the Himalaya, it is 100 inches or more.

It may be said generally that India east of the 80th meridian has a rainfall of more than 80 inches; but less than 30 inches falls in the Panjab, over a considerable part of the N.W. Provinces, over a large part of Rajputana and Kattyawar, and in almost all the Dekhan and Mysore.

In the southern portion of the Panjab, and in Sind and the most westerly part of Rajputana, the rainfall is less than 15 inches, and these are either actual desert, or agriculture is impossible without artificial irrigation.

The regions which suffer most from droughts and famines have average rainfalls between 20 and 35 inches, and in all of them seasons of scarcity or famine often recur. In these regions occurred the great famines of 1837-38 in the N.W. Provinces, of 1868-69 in Rajputana, and of 1876-77 over nearly the whole of the Peninsula of Southern India, and mainly due to failure of S.W. monsoon.

The eastern districts of Bengal and Assam, Burma, the strip between the Western Ghats and the sea, and the upper valley of the Nerbadda, have a rainfall sufficiently abundant to be exempt from all risk of drought, and Sind is protected by artificial irrigation from the Indus. On the other hand, droughts are of frequent occurrence—(1) in the west and the south parts of the N.W. Provinces, and that part of the Panjab east of the Sutlej; (2) in the west and north parts of Rajputana, and the central plateau which borders on the N.W. Provinces; (3) the districts of Bombay above the Western Ghats, and the districts of Madras above the Eastern Ghats, together with the southern and western region of Hyderabad and all Mysore, except the strip lying close along the

RAIN.

Western Ghats; (4) the districts of Madras along the east coast and at the extremity of the Peninsula.

The rainfall in India proper fluctuates as much as 50 per cent. on either side of the average. In Madras, the average during the 66 years 1813 to 1879 was 48·51 inches, but in 1832 there fell 18·45 inches, and in 1827 the fall was 88·41 inches.

The rainfall at Bombay in the five months June to October during the 50 years 1817 to 1866 inclusive, ranged from 33·97 in 1824 to 121·98 inches in 1828.

In Calcutta the rainfall in the year averages 63 inches; but in 1837 only 43·61 inches fell, while in 1871 the quantity was 93·31 inches.

Bangalore, Mysore, Tumkur, and Shemoga are towns in the Mysore territories all of which are in the region of scant rainfall, and any failure of the rains involves dearth, even famine. In 1876 and 1877 the rains thus failed in Mysore, and upwards of a million of its people perished.

	Aver. in.	Lowest, inches.	Highest, inch.
Bangalore, . . .	35·38	15·9 in 1838	48·3 in 1857
Mysore, . . .	28	11·7 in 1839	52·8 in 1852
Tumkur, . . .	33	13 in 1838	57·4 in 1852
Shemoga, . . .	28	15·3 in 1843 & 1855	42·8 in 1852

	Aver. Yearly Rainfall.		Aver. Yearly Rainfall.
Years.	Inches.	Years.	Inches.
Abu, . . .	19 62·36	Kussowlee, . . .	70
Agra, . . .	25·77	Lahore, . . .	20·21 21·48
Ajmir, . . .	14·15 23·34	Lucknow, . . .	8·11 41·69
Akola, . . .	17·18 27·05	Madras, . . .	66 48·51
Akyab, . . .	21·22 196·63	Malegaum, . . .	9·18 23·52
Allahabad, . . .	21·22 35·92	Mandla, . . .	53·65
Almora, . . .	34	Meerut, . . .	27·44
Bangalore, . . .	41·42 35·38	Mewar, . . .	23
Belgaum, . . .	48·15	Mongpoo, . . .	5·6 119·44
Bellary, . . .	25 17·33	Moulmein, . . .	29 189·39
Benares, . . .	41	Multan, . . .	21 7·52
Betul, . . .	40·07	Murree, . . .	4 58·44
Bhandara, . . .	50·36	Mysore, . . .	28
Bhurtpur, . . .	32	Nagpur, . . .	31·32 43·43
Bikanir, N., . . .	8	Naini Tal, . . .	88
„ S., . . .	20	Narsingpur, . . .	54·72
Bilaspur, . . .	49·29	Newera Elia, . . .	8·9 99·45
Bombay, . . .	32·62 74·20	Nimar, . . .	35·19
Calcutta, . . .	49·50 65·80	Pachmarri, . . .	7·8 80·93
Cape Comorin . . .	30	Panchgunnee, . . .	50
Chanda, . . .	47·14	Panjab Plains, . . .	22
Cherrapunji, . . .	400	Patna, . . .	23·25 40·69
Ch'hindwara, . . .	41·27	Peshawur, . . .	14·66
Chikaldia, . . .	7·8 58·13	Poona, . . .	23 30·41
Chikrata, . . .	10 59·96	Port Blair, . . .	11 117·39
Chittagong, . . .	20·24 103·73	Purandhar, . . .	72
Cuttack, . . .	18·20 55·60	Quilon, . . .	77
Dacca, . . .	23·79	Raipur, . . .	51·54
Damoh, . . .	56·30	Rangoon, . . .	9 99·69
Darjiling, . . .	18·21 118·24	Ranikhet, . . .	48·56
Deesa, . . .	21·23 23·75	Rawal Pindi, . . .	20·21 33·89
Dehli, . . .	28·29 27·20	Roorkee, . . .	18·19 40·92
Dharmasala, . . .	152	Saugor, . . .	20·23 47·23
Dugbhai, . . .	30	Selwan, . . .	5
Goalpara, . . .	17 93·34	Seoni, . . .	20·22 49·02
Godavery, Up- per, . . .	42·97	Shemoga, . . .	28·7
Hazaribagh, . . .	17·19 48·52	Shillong, . . .	12·13 86·93
Hoshangabad . . .	47·16	Sholapur, . . .	30·7
Hyderabad & S. Dekhan, . . .	25	Sibsagar, . . .	22·24 93·98
do. N. Dekhan . . .	28	Silchar, . . .	21·22 117·54
Indore, . . .	36·30	Simla, . . .	16·17 70·20
Jacobabad, . . .	18 4·86	Sind & Cutch, . . .	9
Jhalrapatan, . . .	40	Sirsa, . . .	27·28 15·17
Jhansi, . . .	35·08	Sumbulpore, . . .	14·16 54·18
Jubbulpur, . . .	33·35 52·32	Sylhet, . . .	209
Kandesh and Berar, . . .	29	Tavoy, . . .	208
Kandy, . . .	9 81·27	Trevandrum, . . .	65
Khatmandu, . . .	24·28 55·90	Trichinopoly, . . .	25·27 38·70
Kurachee, . . .	22·27 7·61	Tumkur, . . .	33
		Wardha, . . .	36·09
		Wellington, . . .	40·89

There is a rainless region about the Red Sea, because the Red Sea for the most part lies within the north-east trade-wind region, and these winds, when they reach that region, are dry winds, for they have as yet in their course crossed no wide sheets of water from which they could take up a supply of vapour.

In 1876-77, a year of a great famine in the Peninsula, there was an unusual northerly tendency on the winds all down the Peninsula. Cycles of variation are known to occur in the spottiness of the sun's surface, certainly one, the duration of which is about 11 years; and the inquiries of Mr. Meldrum have shown the probability that about the time when the sun is most spotted, the rainfall is about 15 per cent. greater than when it is least spotted. But inquirers have not been able to detect anything like a distinct cyclical variation amid the much greater variations that follow no such law.—*Famine Commissioners' Rep.; Madras Observatory Records; Moral and Material Progress; H. F. Blanford; Tennent's Ceylon; Hooker; Thomson's Travels; Maury's Phys. Geog.; Records of Trig. Survey.*

RAINBOW.

Kauz kasah, . . .	ARAB.	Kaman, . . .	HIND.
Thek-tap, . . .	BURM.	L'arcobatend, . . .	IR.
Arc en ciel, . . .	FR.	Arco iris, . . .	SP.
Regenbogen, . . .	GER.	Elizim Saghma, . . .	TURK.

RAINI. HIND. A narrow bar of silver cast in a mould, designed to form a *kandla*.

RAIN-STONE, used by the Turk and Tartar tribes to conjure rain, is also known among the Kalmuk. This stone was called by the Turks *Jadah* (PERS. *Yadah*); perhaps the origin of the jade-stone? or may be connected with the Hindi word *Jadu*, conjuring, in common use in India.—*Quatrenere on Rashid-ud-Din*, p. 428.

RAIN WATER.

Yu-shwui, . . .	CHIN.	Ayer-sung-ei, . . .	MALAY.
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Rain falling in China during the dragon boat festival of the fifth day of the fifth month is called holy water, and is said to be cooling, sedative, and expectorant. Rain water falling at night is said to be anthelmintic. Spring rain water if drunk out of one cup by a man and his wife, they are said to bear many children. Snow water is deemed anthelmintic.

RAIPUR, a town in the Central Provinces of British India, in lat. 21° 15' N., and long. 81° 41' E., on a plateau 950 feet above the sea-level. It gives its name to a district extending between lat. 19° 48' and 21° 45' N., and long. 80° 28' and 82° 38' E., comprising the larger part of the tract known by the name of Ch'hattisgarh, together with a large area formerly attached to Sumbulpore, and a population of one and a half millions. It is about 150 miles in breadth from east to west, and 135 miles in length from north to south. Like the rest of Central India, Ch'hattisgarh seems to have been inhabited in the earliest times by Bhunjia and other Kolarian races from the east. The population of Raipur has been recruited from all quarters; but the most important immigrants, and the earliest after the first great Gond invasion, came from the north. A few wild wanderers in the jungles came from the east, while from the south and west there has been a considerable influx of population. Of the immigrant tribes, the Kurmi, Teli, Lodhi, Chamar, Ahir or Gaira, Ganda, and Kanwar seem to have come from the

north, though a large section of Teli and some few Kurmi have come from Nagpur. The greater number of immigrants from the south and west are the Halba from Bastar and Chanda, and the Mahratta race. The principal cultivating castes are Kurmi, Teli, Chamar, and Halba, though of these only the Kurmi and Teli are large landholders. The Brahmans in 1872 numbered 16,800; the mass of the Hindu population consisting of Teli, 161,276; Ahir or Gaira, 97,861; Chamars, 57,308; Dhimars, 53,212; Kurmi, 47,845; Native Christians in 1877, 319. The Kanwar, who supply the most trusted followers of the Haihai-Bansi kings, in 1872 numbered only 11,214. The Banjaras in 1872 only amounted to 5474. The Satnami (113,786 in number) and the Kabirpanthi (64,979), Hindu sects who recognise no distinction of caste, are almost confined to Raipur and Bilaspur. They are recruited mainly from the Chamars, with whom the Satnami are often confused, but also from the Ahir and other castes. Like Rai Das, the founder of the Satnami, Kabir, whom the Kabirpanthi follow, was a disciple of Ramanand, and taught a similar doctrine. The Chamar lay claim to a very high antiquity among the inhabitants of the district. They have all joined the Rai Dasi sect formed by Rai Das, a Chamar or shoemaker, a reformer, and disciple of Ramanand, who is said to have lived about the fifteenth century in the country lying to the south of Oudh and in Rewa. The creed he preached seems to have been that adopted by Ghasi Das, the celebrated Satnami teacher, who started the great movement among the Chamar race about the beginning of the nineteenth century, and who seems rather to have revived the teaching of Rai Das than preached a new religion. The term of Satnami or pure name was that assumed by the followers of Rai Das. As Satnami, they are scrupulous about their eating, but slovenly and untidy in their habits, and the houses of even the wealthiest of them are usually hovels. They are generally industrious, though careless, cultivators, and frugal in the extreme, indulging in no extravagance in dress or jewellery. The dress of the men is commonly a single cloth, one end of which encircles their loins and another their head, and the women wear little or no jewellery; yet they rarely make money, and seem to want the talent of getting on in the world. Their villages are seldom prosperous, though some few malguzar form conspicuous exceptions to the rule. This apparent inability to improve their position is partly due to Hindu opposition, but one great cause seems to be their individual fickleness and want of perseverance. A very slight cause will send a Chamar cultivator away from his village, and though they generally return after a short interval, yet these migrations necessarily hinder the accumulation of property.

The *Ganda* or *Panka* are Kabirpanthi, or followers of Kabir, who is said to have appeared in the weaver caste, in the same country and at the same time as Rai Das, both being disciples of Ramanand, and their doctrines being similar in many respects. Though they cultivate the land, they are not generally esteemed as cultivators, while the few villages they hold as landholders are miserable in the extreme.

The *Kanwar* are usually looked upon as aborigines, and though their appearance and their

preference for the jungles to the cultivated tracts, as well as their abstinence from Hindu observances, would seem to point to this opinion, there is also some ground for supposing them to be Rajputs who settled in early times among the hills of the Vindhyan range, and so failed in becoming Hinduized like other warlike immigrants. They have always made a claim, though in a half-hearted way, to be considered as Rajputs connected with the Tuar tribe of the north-west, and their claim has certainly been recognised in one instance, as the first Kanwar chief of Narra received his estate as a dowry with the daughter of the Rajput chief of Khariar. The warlike traditions of the race are preserved in their worship of Jhagra Kandh or Jhagra Kandha, under the form of a sword, a form of worship not uncommon among Rajput tribes, and recalling to mind the sword which was the national deity of the Hun under Attila. The Kanwar of the present day are most peaceable and quiet, and when once fairly settled in a cultivated country, are industrious and good cultivators and landlords. In the jungles they have conformed generally to the customs of their neighbours, and worship Dula Deo and Burha Deo, as the Gond race also do; and they always seem to be ready to take up with the belief of those about them, though all of them, except the richer classes, who wish to be considered good Hindus, avoid Brahmans. They bury their dead, and marriages are performed before the elders of the village.

The *Halba* are immigrants from the south, and their principal colony is in the south-west, where they hold thirty-seven flourishing villages. They gain their living chiefly by distilling spirit, and worship deified distillers, at the head of whom is Bahadur Kalal. They are, next to the Teli, the best cultivators; except in the jungles, they have generally become Hinduized. All that is necessary for a good Halba is that he should sacrifice once in his life three goats and a pig,—one to each of the national deities, called Narayan Gosain, Burha Deo, Sati, and Ratna.

In the jungles also the old religion of the Gond tribe is disappearing, and while all the Gond worship Burha Deo and Dula Deo, the latter being the household god, they know little of Pauritola or Karitola, Barangasura, and Gumartola, who with Burha Deo form the distinctive gods of the Dhur Gond, to which tribe most of the Ch'hattisgarh Gond belong. They are all intensely superstitious, and worship local deities assiduously; though, except in the jungles, the Baiga or village priest, whose business it is to propitiate the evil spirits of the neighbourhood, is as often as not a Kewat, Teli, or Ahir, as a Gond.

The other aboriginal tribes are the Binjwar, Bhunjia, Saonra, Nahar, and Kamar; of these the Binjwar are allied to the Baiga, who are found in the Mandla district. They chiefly live in the north-east of Raipur, and occasionally cultivate. The Bhunjia are comparatively numerous all through the east of the district, and are particularly so in the Khariar and Bindra Nawagarh zamindari, where they hold a good many fairly cultivated villages. The Saonra use only game. All these jungle tribes seem to have come from Orissa, and their dialects are all akin to Uriya. Except the Saonra, they all gain their livelihood more by collecting jungle produce than cultivation.

The *Beldar* of Uriya are tank-diggers by profession, and are all under the command of a chief called a jemadar, who holds three villages in the district. Under the jemadar are a number of naiks, each of whom has the command of a gang. These gangs have no settled home, but go wandering about the district wherever they can get work.—*Imp. Gaz. ; Central Provinces Gazetteer.*

RAI RAIAN, a Hindu title next above that of rai. The third titular honour given to a Hindu. Rai raian and raja raian, meaning literally prince of princes, are titles bestowed on Hindu civil officers. See Rai; Raja.

RAIS. ARAB. A ruler, a shipmaster, often written Reiss. Raisat means rule, dominion. The Raisani are the most respectable of the Saharawani tribes of Baluchistan.

RAISINS.

Zabib, . . .	ARAB., MALAY.	Bedana, . . .	HIND.
Kan-pu-tau, . . .	CHIN.	Uve passe, . . .	IT.
Raisins secs, . . .	FR.	Uve passe, . . .	LAT.
Raisins passes, . . .	"	Passa, . . .	PORT.
Rosinon, . . .	GER.	Uts-ka'h, . . .	PUSHTU
Darakh, Mowage, . . .	GUJ.	Issum, . . .	RUS.
Monukka, Kismis, . . .	HIND.	Pasas, . . .	SP.

Raisins are grapes allowed to ripen and dry upon the vine. The sweet fleshy grapes which grow upon the sunny, sheltered slopes of hills are preferred. When the fruit is ripe, the grapes are thinned and the vine is stripped of its leaves. The sun then completes the saccharification, and drives off the superfluous water. When the bunches are plucked they are cleaned, dipped for a few seconds in a boiling lye of wood-ashes and quicklime; the wrinkled fruit is then drained and dried by exposure to the sun upon hurdles for 14 or 15 days. The finest sun-raisins are the plumpest bunches left fully to ripen upon the vine, after their stalks have been cut half through. An inferior kind of raisins is prepared by drying the grapes in an oven. They are distinguished by the places where produced or exported, as Malaga, Valencia, Persian, Smyrna, etc.; or from the variety of grape or mode of preparation, as muscatels, blooms, sultanas, be-dana, etc. Kismis sabz, or green raisins, are dried in the shade, and preserve a pale green colour; 4 seers or 8 lbs. are sold per rupee. Kismis sabz and kismis surkh are both varieties of the small raisin called in England the sultana, or seedless (be-dana) raisin. The Munakka of N.W. India are pudding raisins, large ordinary grapes, dried carefully in the sun, and sold at 3 seers per rupee. The Dagh are bloom raisins, prepared by dipping the finest bunches into a hot solution of lime and potash, and then dried in the shade.—*Waterston; Powell; Poole, St. of Com. ; O'Sh.*

RAIVATA, king of Anarta, built the city of Kusasthali or Dwaraka in Gujerat, which he made his capital. He gave his beautiful daughter Revati to Bala Rama.—*Dowson.*

RAJ. HIND. A government, a kingdom, a principality, a rule, a dynasty.

RAJA, a title in India of independent Hindu sovereigns, but also bestowed on Hindu civil officers of rank. It is also held by the Malay chiefs of the Netherland possessions in the Archipelago. A lady of this rank is Raji. Amongst the Malay, Raja-muda is the heir-apparent to the throne. Raja Rajeshwari is from Raja-rai, king of kings, and Ishwari, a goddess. Rajarshi, from Rajan, a king, and Rishi, a sage. Raja Suya,

SANSK., from Rajan, a king, and Su, birth; and amongst ancient Hindu sovereigns was a sacrifice performed to indicate that the sovereign is supreme over other kings, is an emperor; a royal sacrifice performed as an assertion of sovereign supremacy, at a national banquet, combined with a religious significance, as a sacrifice to the gods. Maharaja, literally great ruler, is a titular distinction only applied to ruling Hindu princes of India. Rajadhi Raja, a supreme king of kings.

RAJAB. ARAB. The seventh month of the Muhammadan year, also called Rajab-ul-Marajab, the sacred month, because during it, before the time of Mahomed, the Arab tribes ceased to war amongst themselves. Rajab salar ki Kundori, a Muhammadan ceremony.

RAJABANSI, in Rangpur, a low caste race engaged in agricultural pursuits.

RAJA DAKHINA RANJAN MOOKERJEE, one of the pioneers of female education in Bengal. The first Hindu female school in India for giving a liberal education after the European model, called the Victoria School, was established in Calcutta in April 1848, by J. E. D. Bethune, in Raja Mookerjee's house in Sukea's Street. Within a few weeks from the day of its commencement, there were enrolled among its pupils 70 daughters of the most respectable families in Calcutta.

RAJAGRIHA, or the Royal Residence, was the original capital of Magadha. It was also named Kusagarapura, and also Girivraja or the Hill Surrounded, which agrees with Hiwen Thsang's description of it as a town surrounded by mountains. On the death of Sakya, a synod of his disciples was held here; it consisted of 500 monks of a superior order. Its ruins are still visible in lat. 25° 0' 45" N., long. 85° 28' E., between Patna and Gaya. The five hills surrounding the city are mentioned in the Mahabharata. The first, Baibhar, is the Webbars mountain of the Pali annals, on the side of which was the famous Sattapanni cave, where the first Buddhist synod was held in B.C. 543, after Sakya's death. The second hill, Ratnagiri, is the one called by Fa Hian the Fig-tree Cave, where Buddha meditated after his meals, identical with the Rishigiri of the Mahabharata and the Pandao of the Pali annals. A paved zigzag road leads to a small temple on the summit of this mountain, which is still used by Jains. The third hill, Bipula, is the Wepullo of the Pali annals, and the Chait-yaka of the Mahabharata.

Under the name Girivraja, Rajagriha is mentioned as the capital of Jarasandha, king of Magadha (B.C. 1426), mentioned both in the Ramayana and the Mahabharata. It is also described by Fa Hian and Hiwen Thsang, the Chinese Pilgrims; the latter gives an account of the hot springs found in this place.—*Fergusson*; *Cunningham*, *India*, p. 426; *Imp. Gaz.* See Rajgir.

RAJA - MARTANDA, an astrological work attributed to Raja Boja of Dhar.

RAJAMUNDRY, a town in the Madras Presidency, in lat. 16° 50' N., and long. 81° 48' 30" E., on the left bank of the Godavery, 30 miles from the sea, and 565 miles to the north of Madras. Population (1871), 19,682. The district lies between lat. 16° 18' and 17° 35' N. The western parts are elevated and picturesque, and on the north-west are forest-clad mountains. Rajamundry was the capital of the junior or eastern

branch of the Chalukya princes of Vengi, whose authority extended to the frontiers of Orissa. The kingdom of Vengi was established about A.D. 540, by the capture of the old capital of Vengipura, the remains of which still exist at Vengi, five miles to the north of Ellora, and 50 miles to the west-south-west of Rajamundry. About A.D. 750, Kalinga was conquered by the raja of Vengi, who shortly after moved the seat of government to Rajamundry. According to the chronicles of Orissa, the present town of Amaravati was founded or established as a subordinate seat of government by Surya Deva, raja of Orissa, in the 12th century. The name is connected with the worship of Siva as Amaranatha or Amareswara; and one of the twelve great linga of this god, which is assigned to Ujjain, almost certainly belonged to the holy city on the Kistna, as we know that Ujjain possessed its own famous temple of Mahakala, and that all the other shrines of Siva belong to different places. Chicacole and Rajamundry were the capitals of Andhra, and of a race of sovereigns anterior to the Christian era. The chief towns are Rajamundry, Samulcottah, and Coringa. The Godavery enters it through a gap in the chain, and passes through the district to the sea. At the village of Dowlaishwaram, in the delta of the Godavery, is a large anicut seven miles long.

RAJA PUTNI MULL built a bridge over the Caramnassa, the waters of which are deemed by Hindus injurious to their souls' safety. The same rebuilt a temple at Muttra which cost 70,000 rupees, made a stone tank there at a cost of three lakhs, a well at Jwala-Mukhi which cost 90,000 rupees; he spent 90,000 on a ghat at Hardwar, 60,000 on a serai at Brindaban. On these and other public works he spent eight lakhs of rupees, and Lord W. Bentinck made him a raja. He has recorded in four languages on this bridge the fact of his erecting it; the foundation had been previously laid by the prime minister of Poona, who spent three lakhs on it. The bridge was designed by James Prinsep.—*Cal. Rev.* No. 41; *Trav. of Hind.* i. p. 235.

RAJA-RAM, Bag'hel, protected the wife of Humayun, the emperor Akbar's mother.

RAJA'S CHOULTRY, immediately west of Madras, has extensive beds of claylate, in which the brothers Schlegentweit discovered tertiary fossils. Underlying the sands and clays of Madras, and all along the sea-coast, is a bed of dark-blue tenacious clay, containing numerous fossils of existing species.

RAJA SEKHARA, a Sanskrit writer and dramatic author, who is supposed to have lived about the beginning of the 12th century. He wrote in Sanskrit the two dramas Vidha Salabhanjika and the Prachanda Pandava, also in Prakrit the Karpura Manjari.—*Dowson*.

RAJASTHAN or Rajputana is the collective and classical denomination of that portion of India which is ruled over by races who designate themselves Rajput or princes. In the familiar dialect of these countries it is termed Rajwarra, but by the more refined Raet'hana changed to Rajputana, the common designation amongst the British to denote the Rajput principalities. The chief divisions of this region are—Mewar or Udaipur, Marwar or Jodhpur, Bikanir and Kishengarh, Kotah, Bundi, or Harowtee; Amber or

Jeypore, with its branches, dependent and independent; Jeysulmir; the Indian Desert to the valley of the Indus.—*Tod's Rajasthan*.

RAJA TARANGINI, a history of the rulers of Kashmir, which commences with an account of the desiccation of the valley by Kasyapa muni, supposed to be Noah. It is in Sanskrit, and is the only Indian history of any antiquity. It contains the history of the princes of Kashmir for a period of 4000 years. A copy of it up to A.D. 1477 was presented to Akbar, who ordered it to be completed. The two words are Sanskrit, from Rajan, a king, and Tarangini, a river, a stream of kings. It is in four parts. The first was written by Kalhana, a pandit, and is the only truly historical work which any of the races of Hindus has produced. It is in Sanskrit metre. Kalhana is supposed to have lived A.D. 1158. He brings the history down to 1027. The two next portions bring the series down to about A.D. 1477, and are known as the Rajavali of Jona Raja and the Jaina Raja Tarangini of Sri Vara Pandita, a pupil of Jona Raja. A fourth portion was written so late as in the time of the emperor Akbar.—*Wilson's Kashmir*; *Tr. As. Soc.* xv. See Raj Tarangini.

RAJAURI, Rajaori, or Rajapuri, a district in the Western Himalaya, lying between Kashmir on the north and Jammu on the south, between lat. 33° and 34° N., and long. 74° and 75° E. It is bounded on the N. by the Pir Panjal, on the W. by Punach, on the S. by Bhimbar, and on the E. by Rihasi and Aknur. In the 11th and 12th centuries it was an independent state. In the 15th century the Hindu family was dispossessed in favour of a son of the Muhammadan king of Kashmir; and his descendant was so reduced by Gulab Singh, that in 1846 he was glad to accept an estate in the British district of Kangra in exchange for his petty chieftship of Rajauri.—*Cunningham, India*, p. 130.

RAJAWAR, a widely-spread aboriginal tribe in the Palamow, Singrowlee, and Rewa, westward in parts of Sirguja and Jushpur, and numerous to the N.E. in the parts of the plains adjoining the hills. They are the chief labouring class in the Gya district, near the hills. They live in villages as a kind of serfs and bearers of burdens, carry palanquins, and when out of employ are apt to be thieves and robbers.—*Mr. Campbell*, p. 37.

RAJAZ. ARAB. A kind of verse, a battle song or war song.

RAJ-BANSI is a title used by the people of Koch-Bihar to designate themselves. They are Koch who have adopted many Hindu customs.

BAJ-BHAR, called Bharat and Bharpatwa, the Bhar of Northern India, an aboriginal race following the meanest of avocations, especially that of swine-herds. In the hills east of Mirzapore there are some Bhar rajas. Tradition ascribes to them the whole country from Gorakhpur to Bundelkhand, and many old stone forts. Professor Wilson supposes it possible that the name comes from Bharata, an ancient name of India.—*Wilson's Glossary*.

RAJ-CULA, the Chatees Raj-cula, are the thirty-six royal races of Rajputs.

RAJ-DWARA, SANSK., literally the royal gate, an allusion to the female apartments or Raj-loca.

RAJECARIA. TAM., TEL. Compulsory labour. It was abolished in British India in A.D. 1893, but,

subsequently, with modifications, reintroduced for the protection of the bunds of tanks and the public safety.

RAJENDRA LAL, a Hindu of Calcutta who wrote an account of Orissa.

RAJGARH, a Native State in Malwa, which produces opium and grain. In 1871, the Rawat, Moti Singh, became a convert to Muhammadanism, and took the name of Muhammad Abdul Wasih Khan. He received the title of nawab from the British Government in 1872, and is entitled to a salute of 11 guns. The military force consists of 240 cavalry, 360 infantry, 4 field and 8 other guns, with 12 artillerymen.—*Imp. Gaz.*

RAJGIR, the representative of the ancient Rajagriha. The name is repeated in numerous inscriptions on the temples in the Raibhar and Vipula mountains. The old city of Rajagriha is called Kusagarapura, or the city of the Kusa-grass, by Hiwen Thsang, who further describes it as the town surrounded by mountains. It has the two Son-Bhandar caves or Golden Treasury; also a natural cavern called the house of Deva-data, and the group of natural caves at Gridhara Kuta, three miles N.E. from the city where Sakya and Ananda dwelt.—*B. A. S. J.* No. 34, 1854. See Rajagriha.

RAJ-GURU or Raj-gur is the priest, spiritual adviser, tutor, or preceptor of a raja; but the term is applied in Kattyawar to the domestic Brahman of any family. The Katt'hi and even every individual of a Hindu caste has a Raj-guru. In the peninsula of Gujerat and Cutch, the Raj-guru form a distinct tribe.—*Cormack's Infanticide*.

RAJIAVARU. TEL. Sudra Hindus, armed peons in Mysore; also a class of people in Kamaon speaking Telugu. See Rachwar.

RAJIM. ARAB. Execrable; one to be pelted with stones, especially the devil, whom, in the ceremonies of the Haj pilgrimage to Mecca, Muhammadans suppose themselves to be pelting when they throw stones on Mount Arafat, intending by that action to express their utter detestation of him, and to devote him to infamy and destruction,—death by stoning, called rajim, being regarded as the most infamous mode.

RAJIN, a Muhammadan convert from the Bhatti; cultivators, shepherds, thieves, and evil-livers.

RAJ JOGI is the chief of the ascetic warriors of Mewar; the mahants are commanders.

RAJKOT, in lat. 22° 13' N., long. 71° 7' E., the capital of a Native State within the Political Agency of Kattyawar, Bombay. Area, 479 square miles, comprising 60 villages; population (1872), 36,770.

RAJKUMAR, a numerous and wealthy agricultural race in the N.W. Provinces, long notorious for the murder of their infant daughters. They claim descent from Prithi-raj, in whom ended, about the last days of the 12th century, the Chauhan dynasty of the princes of Dehli, and from whose stock the present race of the Rajkumar (who then also assumed this new family denomination) is claimed to be sprung. Their number, it is said, does not exceed 40,000, most of whom inhabit the N.W. Provinces in nearly one society. They exceed the whole of the Rajput races in the wildness of their notions and peculiarity of their manners.—*Cormack, Infanticide*, p. 1; *Wils. Gloss.*

RAJMAHAL, a town in the Santal Parganas district of Bengal, situated in lat. $25^{\circ} 2' 51''$ N., and long. $87^{\circ} 52' 51''$ E., on the right bank of the Ganges. The town gives its name to a subdivision of the Santal Parganas; area, 1343 square miles, and population, 332,194; also to the Rajmahal Hills. Man Singh, Akbar's Rajput general, after his return from the conquest of Orissa in 1592, selected Rajmahal (formerly Agmahal) as the capital of Bengal, on account of its central position with respect to that province and to Behar, and from its commanding the Ganges and the pass of Teliagarhi, through which the railway now runs; but its position has lately been changed. In 1860, when the loop-line of the railway was opened to this town, an arm of the Ganges ran immediately under the station, forming a navigable channel for steamers and boats of all sizes. In 1863-64, the river abandoned that channel, leaving an alluvial bank in its place. Rajmahal is now three miles distant from the main stream of the Ganges, and can only be approached by large boats during the rains. The Rajmahal people are known as Male. They are to the east of the Oraon, but are entirely different from their neighbours the Santal. They are better looking than the Santal. The skin is dark, face broad, eye small, and lips thicker than those of the men of the plains. Their language abounds in terms common to the Tamil and Telugu, and contains so many Dravidian roots of primary importance, though it also contains a large admixture of roots and forms belonging to the Kol dialects, that Dr. Caldwell considers it had originally belonged to the Dravidian family of languages. A brief vocabulary of the words of the tribe inhabiting the Rajmahal Hills in Central India, is contained in vol. v. of the Asiatic Researches, and Mr. Hodgson's more complete collections prove the idiom of this tribe to be in the main Dravidian. Test words show an identity of language among the Rajmahali on the east and the Maria Gond in the remote jungles down to the Godavery, and the Gond who live along the Satpura as far west as Nimar and Malwa. It was the Male race amongst whom Mr. Cleveland so successfully laboured, to impart to them settled habits. They are quiet cultivators, and formed the bulk of the corps known as the Bhagulpur Hill Rangers. Ghatwal estates are particularly numerous in the Bhagulpur and Birbhum districts adjoining the Rajmahal Hills on either side. Such estates pay no revenue, but are held on the condition of guarding the passes against hill robbers, murderers, and cattle-lifters.—*Geo. Soc. Journ.*, 1861; *Dalton, Beng.*

RAJMAHAL HILLS, the most important range in the Santal Parganas district, which abruptly rise from the valley of the Ganges, and are estimated to cover an area of 1366 square miles. Their height nowhere exceeds 2000 feet above sea-level. Rising about 20 miles S. of the Ganges, they stretch S. and S.W. to the Vindhya range and the high lands of the Dekhan. They terminate at the pass of Sikrigali. They are covered almost to their summits with dense jungle, but there are numerous passes through the successive ranges. They are quite detached from the Vindhya, and, physically, both the Rajmahal and Ramgarh Hills may be regarded as forming an isolated group, the north-eastern extremity of which constitutes the turning point of the Ganges.

Geologically, the Vindhya range is composed of quartzite sandstone, limestones, and shales of great age, and the Rajmahal Hills of overflowing basaltic trap of comparatively recent age, which rests upon coal-measures and metamorphic (gneissose) rocks.—*Bull; Dalton, Ethnol. of Bengal*, p. 268.

RAJ-MALA, or Chronicles of Tripura, a Bengali poem.

RAJO GUNA. SANSK. In Hindu theology and philosophy, the property of foulness and error, from Ranj, colour, and Guna, a quality. See Guna.

RAJPIPLA is a Native State ruled by a Hindu sovereign. It is within the Bombay Presidency, between lat. $21^{\circ} 23'$ and $21^{\circ} 59'$ N., and long. $75^{\circ} 5'$ and 74° E. Area (comprising 591 villages), 1514 square miles; population (1881), 120,036, of whom about 60 per cent. are Bhils. Three-fourths of the state are occupied by a continuation of the Satpura range, known as the Rajpipla Hills, nowhere exceeding 2000 feet above the sea. Mines of quartzose minerals are worked at Ratanpur, a village about 14 miles above the town of Broach. The climate is exceedingly unhealthy, malarious fevers being prevalent from September to February. Its chalcodones, agates, onyx, cornelian, and bloodstone are called Cambay stones, from the place where they are mostly cut, and from which they are almost wholly brought to Bombay. They are found in a bed of blue clay, the detritus, probably, of the adjoining rocks. Shafts are pierced in this to the depth of from 30 to 35 feet, and horizontal galleries run in any direction that suits the fancy of the miner; the pebbles are distributed promiscuously, and do not appear to lie in veins or lodes. The galleries seldom exceed 100 yards in length; they often run into those of other mines; they are generally five feet in height, and four across. To each mine there are 13 men attached, who work by turns. Each man must send up so many basketfuls of earth and stones before he is relieved. The stones are collected in baskets, and drawn up by a rope run over a roller or pulley. A group of people await them at the mouth of the shaft, and examine them one after another by chipping each on a piece of stone; the compact and fine-grained are the best, and the blacker the hue is at first, the redder it becomes after being burnt. There were at one time about 1000 miners employed, and each man carried home with him a basket of stones every evening. They were spread out on the ground, and for a whole year turned over every four or five days to the sun; the longer they are so exposed the richer become their tints. In the month of May they are burnt. This operation is effected by placing the stones in black earthen pots or chatties. The pots are placed mouth under, a hole being pierced in the bottom of each; over this is put a piece of broken pot. The pots are arranged in single rows; sheep's dung is the only fuel found to answer; the fire is always lighted at sunset, and allowed to burn till sunrise. If any white spot appear on the surface of the pot, the burning is reckoned incomplete and the fire continued some time longer. On being removed, the stones that have flaws are thrown aside as useless, those not sufficiently burnt are kept for next year's burning, and the remainder are sold for exportation. Nearly the whole of the stones are cut at

Cambay; the greater part of them are made into beads. In the process, the stones are first broken up into pieces of suitable size for the end they are desired to serve. An iron spike is stuck into the ground, point upwards; the stone is placed on this, and chipped with a hammer till nearly rounded; it is then passed on to the polisher, who seizes it in a pair of wooden clams, and rubs it against a piece of sandstone placed in an inclined plane before him, turning it round from time to time till it assumes a globular form. It is then passed on to the borer and polisher; a hole is drilled. Cambay enjoys celebrity for its agates, mocha-stones, cornelians, and all the chalcedonic and onyx family, all of them brought from Rajpipla, but worked up at Cambay into every variety of ornament,—cups, boxes, necklaces, handles of daggers, of knives and forks, seals, etc. Cambay stones, the akeek of the natives of Bombay, and by Europeans called agates, include all kinds of quartz minerals. They are also obtained from the amygdaloid trap rocks drained by the Nerbadda and Tapti. The principal varieties sold in Bombay are crystal, milk quartz, prase, a great variety of moss-stone, mocha-stone, fortification agate, chalcedony, cornelian, chrysoprase, heliotrope, onyx, obsidian, and very rarely amethyst. They pass in Europe and America for Scotch, Irish, Chamouni, Niagara, and Isle of Wight pebbles, according to the place in which they are sold. These stones, however, abound in all trap countries, the Brazils importing them as largely as India into Europe, where the terms Brazilian and Indian agates are used indifferently by the trade.

RAJPUR ALI, a Native State in Central India, lying between the Narbada (Nerbadda) river and the Vindhya mountains. Area, 800 square miles; population (1875), 29,000. The chiefs of Rajpur Ali are Sesodia Rajputs, connected with the Udaipur (Odeypore) family. Rajpur Ali contributes £150 per annum towards the cost of the Malwa Bhil corps. Its military force consists of 2 guns, 31 horse, and 150 policemen.—*Imp. Gaz.*

RAJPUTANA stretches on the N.W. part of British India from lat. 23° 15' to 30° N., and from long. 69° 30' to 78° 15' E. Its area is about 132,460 square miles, and in 1881 its estimated population was 10,729,114. Two small portions of this region, Ajmir and Merwara, of 2710 square miles, are under British sway, but all the remainder, with its 10,268,392 inhabitants, is under the rule of 20 native princes, of whom 17 are of Rajput descent, 2 are Jat, and one sovereign professes Muhammadanism.

A great part of Rajputana is sterile. A marked feature is the Aravalli mountains, which intersect it from N.E. to S.W., where they culminate in Mount Abu, but at the N.E. end the range breaks into detached hills and rocky eminences, all traceable in a general direction as far as the group of hills near Khetri. Amid these disunited hills stands the town of Ajmir, on the highest level of an open table-land, spreading eastward toward Jeypore, and sloping on all sides.

All the south-east of Rajputana is watered by the drainage of the Vindhya mountains, carried north-eastward by the Banas and Chambal rivers. North of Jhalra Patan is the Patar plateau, upon which lies all Kotah State, with parts of Bundi and of Jhalawar. This plateau falls by a very gradual

descent to the Gwalior country and the basin of the Betwa river. The Chambal flows through the territory for about one-third of its course, and forms its boundary for another third.

The Banas rises in the south-west, near Kankraoli, in Merwara. It collects nearly all the drainage of the Mewar plateau with that of the south-eastern slopes and hill tracts of the Aravalli.

The salt lake at Sambhar is the only natural expanse of water, but there are artificial lakes in the eastern states about Bundi and Kotah, and in Ajmir. The largest of these are in the Mewar State, near Debar and Kankraoli. At the former place is a noble sheet of water 25 or 30 miles in circumference, constructed in A.D. 1681 by Rana Jye Singh, and named from him the Jye Samand, now known as the Rajsamand. It is a stupendous work of marble, and with an adjacent causeway dams the lake at Kankraoli. It cost upwards of a million sterling. The spectator who views this royal sea or Rajsamand on the borders of the plain, as also the pillar of victory towering over the plains of Malwa, erected on the summit of Chitore by Rana Mokul, or the palaces and temples in this ancient abode, and the regal residences erected by the princes, must be filled with astonishment at the resources of the Mewar State. They are such as to explain the metaphor of Zalim Singh, who said 'every pinch of the soil of Mewar contains gold.'

The rainfall throughout Rajputana is nowhere copious, and in several parts is scant,—Abu, 68 inches; Ajmir, 24; Bhurtpur, 32; Bikanir, N., 8; Bikanir, S., 20; Jhalra Patan, 40; and Mewar, 23. Even where the fall is greatest, the nature of the soil allows it to flow away or be absorbed, and only now are efforts being made to store it.

Ulwar, Jeypore, Kotah, Bundi, and Udaipur have very fair land, but Jeysulmir, Bikanir, and parts of Jodhpur or Merwara are particularly barren. Dearth has repeatedly occurred from scant rainfall, and 1848-1849 and 1868-1869 were famine years, the latter being followed by myriads of locusts. The region has four physical divisions, viz. (1) the desert regions, to the north and west of the Aravalli mountains, comprising more than one-half the entire territory, comprehend Merwara, Bikanir, Jeysulmir, and the Shekhawutti; (2) the hill region includes the greater part of Mewar and Banswara, Dungarpur, Partabgarh, and Serohi; (3) the S.E. division of Haraoi includes Bundi, Kotah, and Jhalawar; and (4) Eastern and Central Rajputana extends from Ulwar to Kerrowlee; also, upwards of 60,000 square miles of Bahawalpur are part of the great Rajputana desert.

Westward of the Aravalli there is a strip of soil along the banks of the Luni, which occasionally overflows, and on the subsidence of the waters an alluvial deposit remains which yields good crops of barley and of wheat.

The Great Desert is on the western side of the Aravalli; it separates Rajputana from Sind, extends from the edges of the Runn of Cutch beyond the Luni river northward. Eastward of this is a zone of less absolutely sterile country, consisting of rocky land cut up by limestone ridges, which to some degree protect it from the desert sands; and still farther eastward is 'the

Little Desert,' which runs up from the Luni between Jeysulmir and Jodhpur into the northern wastes. The character of the desert region is the same everywhere. It is covered with sand-hills, the Thull-ka-Tiba running in straight ridges, some of them two miles long, and rising to 100 feet in height. They are clothed with stunted shrubs and tufts of coarse grass in the dry season, and the light rains cover them with vegetation. The villages within the desert depend entirely on the supply of water in the wells, which is constantly failing or turning brackish; on which occurring, the village has to shift. A little water is collected in small tanks or pools, which become dry before the stress of the heat begins; and in places there are long marshes impregnated with salt. This is the prevailing character of the whole north and north-west of Rajputana. The cultivation is everywhere poor and precarious. Nevertheless the principal towns within this region are well built, and fairly prosperous. Their position has given them immunity from predatory armies, and they have for ages managed the traffic across the desert. The most interesting object in this arid region is the Luni, with its many arms flowing from the Aravalli to enrich the best portion of the principality of Jodhpur, and distinctly marking that line of ever-shifting sand, termed in Hindu geography Marooasthuli, corrupted to Merwara. The Luni, after a course of more than 300 miles, terminates in the great salt marsh called the Runn, which is 150 miles in length, and about 70 in breadth. Dr. Govan described it as a dead flat, hardly elevated above the level of the sea, and he compared it to an arm of the ocean from which the water had receded, as it is covered with saline incrustations and marine exuviae. This,

Colonel Tod considers as having been formed by the deposits of the Luni, and equally saturated saline deposits from the southern desert of Dhat.

The main wealth of the desert lands of Merwara and Bikanir consists in the vast herds of camels, horned cattle, and sheep which roam over their sandy wastes, and thrive admirably in the dry climate. Camels and cattle are bred in such numbers that they supply the neighbouring provinces. What are called and sold as Gujerat cattle are often in reality Merwara cattle of the celebrated Nagar breed. The stock is yearly sold at great fairs. In Western Rajputana, camels are also bred in large quantities; and besides being ridden and used as beasts of burden, they are employed in agriculture.

Mr. Fergusson says, p. 473, the palace at Udaipur of the rulers of Mewar, those of Dutiah and Orcha in Bundelkhand, the Gwalior palace, and that at Amber in the Jeypore State, are all worthy of notice; and the palace at Deeg, which is quite a fairy structure, was the work of Suraj Mull, founder of the Bhurtpur dynasty, who began it in the year 1725, but was unfinished when he was killed in battle by Najif Khan, A.D. 1763. Every native capital in Rajputana, he tells us, has a cenotaph, or maha sati, where the sovereigns, their wives, and nearest relatives are buried. The most magnificent of these are in hundreds at Udaipur, all crowned by domes; and that of Singram Singh, to twenty-one of his wives, is the finest. He was buried A.D. 1733. He built that of his predecessor, Amera Singh II. The tomb of Bakhtawar Singh at Ulwar, erected in the 19th century, and the tombs of the Bhurtpur rajas at Govardhan, are also noteworthy.

The Census of 1881 shows as follows:—

State.	Area Sq. M.	Males.	Females.	Total.	Revenue.	Cavalry.	Infantry.	Guns.
<i>Native Princes—</i>								
Banswara,	1,500	53,498	50,502	104,000	£300,000	60	500	3
Bhurtpur (Jat),	1,974	350,475	295,065	645,540	210,000	1,460	8,500	38
Bikanir,	22,340	293,650	215,371	509,021	60,000	670	940	53
Bundi,	2,300	133,103	121,598	254,701	50,000	200	2,000	68
Dholpur (Jat),	1,200	138,342	111,315	249,657	60,000	610	3,650	32
Dungarpur,	1,000	44,568	41,861	86,429	75,000	57	632	4
Jeypore,	14,465	1,369,134	1,165,223	2,534,357	360,000	3,530	10,500	312
Jeysulmir,	16,447	61,127	49,016	108,143	50,000	500	400	12
Jhalawar,	2,694	183,039	157,449	340,488	145,000	400	3,500	90
Jodhpur,	37,000	969,125	781,278	1,750,403	175,000	5,600	4,000	220
Kerrowlee,	1,208	80,645	68,025	148,670	30,000	400	3,200	40
Kishengarh,	724	59,098	53,535	112,633	60,000	150	2,000	35
Kotah,	3,797	269,924	247,351	517,275	250,000	700	4,600	119
Lawa,	18	1,360	1,322	2,682	?	?	?	?
Udaipur,	12,670	772,685	670,459	1,443,144	400,000	6,240	15,100	538
Partalgarh,	1,460	41,118	38,180	79,298	26,240	275	950	12
Shahpura,	400	27,217	24,533	51,750	?	?	?	?
Sirohee,	3,020	76,132	66,771	142,903	80,900	375	350	...
Tonk (Islam),	2,509	176,869	161,160	338,029	80,000	430	2,288	53
Ulwar,	3,024	360,384	322,542	682,926	160,000	2,280	5,633	351
Total Native States, . .	129,750	5,461,493	4,640,556	10,102,049				
Bhils, . . . . .	...	...	...	166,343				
				10,268,392				
<i>British—</i>								
Ajmir,	2,069.8	192,669	166,619	359,288				
Merwara,	640.8	56,175	45,259	101,434				
Total British,	2,710	248,844	211,878	460,722				
Grand Total,	132,460	5,710,337	4,852,434	10,729,114				

Rajputana religion, 1881—

Hindus,	8,839,243	Sikhs,	9
Muhammadians,	861,747	Parsees,	7
Christians,	1,294	Others,	21,077
Jains,	378,672		

Castes.	Males.	Females.	Total.
Brahman,	479,790	426,673	906,463
Rajput,	280,299	199,255	479,554
Mahajan,	333,955	300,485	634,440
Kaeth,	10,415	8,703	19,118
Gujar,	223,197	179,512	402,709
Jat,	223,234	196,364	425,598
Abir,	79,919	59,734	130,653
Mina,	230,963	196,709	427,672
Bhil,	54,486	51,384	105,870
Chamar,	287,052	270,046	557,098
Dhakar,	39,085	35,923	75,008
Sondhia,	21,683	19,057	43,740
Balal,	31,663	29,867	61,530
Other Hindus,	1,794,375	1,549,792	3,344,167
Total Hindus,	3,340,027	2,897,576	6,237,603
Sikh, . . . . .	...	...	9
Parsee, . . . . .	...	...	7
Muhammadian,	400,453	401,294	801,747
Meo, . . . . .	...	...	45,946

The supposed number of Bhils, 166,343, at the Census 1881, in the four states are—

Udaipur,	51,076	Dungarpur,	66,952
Partabgarh,	270	Banswara,	48,045

The Rajputs are the dominant race, but, as will be seen, do not form a majority of the population. The Meo, and some Rajput clans, are converts to Muhammadanism. The Bhat and Charan are bards and chroniclers. The Mahajan mercantile caste are of Rajput descent, and mostly follow the Jaina religion. The Gujar and Jat are cultivators. The Mina, Mhair, and Bhil are the prominent aborigines.

Jeypore is the most modern of the Rajput capitals. It is laid out with spacious streets, and the ruling family have decorated and improved it for generations. It is the headquarters of the banking and exchange transactions, and its bankers have agencies in all the principal towns of India.

Jodhpur is a fenced city in the desert, and Bikanir and Jeysulmir are built upon islands of hard rock amid deep sand. Ajmir, Ulwar (Alwar), and Udaipur are all remarkable for picturesque beauty, and for excellence of situation. Bhurt-pur, Tonk, Kotah, Bundi, and Jhalra Patan are the other important places.

The most remarkable of its forts are Taragarh, above Ajmir, Chitore, Kumalmir, and Gogunda in Mewar, Ulwar (Alwar), Jeypore, Khetri, Bhains-rorgarh, Mandalgarh, Indragarh, Jeysulmir, Bikanir, Jodhpur, Bundi, Kotah, Gagron, and Rinthambor. Rajputana yields cobalt, zinc-blende, copper, lead, iron, magnetic iron, pyrites (pyrrhotite). Raialo limestone, a fine-grained crystalline marble, quarried at Raialo in Ulwar, and at Makrana in Jodhpur, and the Jeysulmir limestone, are well known for their beauty and usefulness. The Makrana quarries supplied the chief portion of the stone for building the Taj at Agra, as well as the marble used in decorating many buildings in Northern and North-Western India. About 1000 workmen are employed at the present day in quarrying and working the stone at Makrana alone.

The Jat and Gujar are north of the Aravalli, and along the borders towards the Panjab and the Jumna from Bikanir round to Bhurtpur, and in

Jeypore. The Ahirs, Lodas, Kachis, Malis, and Chamars all cultivate widely in the eastern districts. South of the Aravalli we find the Kumbis and Sondias as cultivators, immigrants from Central and Southern India; and in the south-west corner we meet with the Kolis, so common in Gujerat.

The Charan race, in Western and Central India, are mostly dwelling under Rajput rule, and are the bards, heralds, and genealogists of the Katthi race. The Kachili Charan are carriers of grain, salt, and groceries. The Maru or desert Charan do not engage in trade. Their becoming personal security for an agreement is sufficient. They are analogous to the Bard.

The Bhat or Bard is the herald, genealogist, and chronicler. In Western India the Bhat has, like the Charan, the privilege of being security for agreements. In Upper India there are village communities of Bhat who do not take so high a place, and in Telingana the Bhatraj claim to be of Bhat descent.—*Tod's Rajasthan*, i. p. 224; *Census Returns*; *Imp. Gaz.*; *Ball's Geology of India*; *Wils. Gloss.*

RAJPUTS, literally sons of rajas or princes, is the name by which the clans of several tribes of India designate themselves, and who in ancient times became dominant in the N.W. of India, from which their branches extended southwards. They are in numerous tribes and clans, and have been supposed to be partly of Aryan, partly of Scythian descent; but the same religion governing the institutions of all the Rajput tribes, operates to counteract that dissimilarity in manners which would naturally be expected amidst so great a variety, from situation or climate. They have the same mythology, the same theogony, and the same festivals, though commemorated with peculiar distinctions.

The Rajputs claim, however, to have sprung from the ancient Solar and Lunar dynasties which ruled in India, and form themselves into the Suryavansa and the Indo or Chandravansa tribes; and there is also a race styled Agnicula, from having sprung from a sacred fire (ignis) which Agastya kindled on Mount Abu. The three Solar races are the Gehlot, Rahtor, and Kachwaha. The four Agnicula races are the Puar or Pramara, with 35 saka; the Parihara, with 12 subdivisions; the Chalukya or Solanki, 16; and Chauhan, with 24 branches. Of the Pramara, the Mori are best known, and of the Chauhan, the Hara, who give their name to Haraoti, and have the two rajas of Kota and Bundi. The single Lunar race, or that of the Yadu or Jadu, descended through Krishna, has eight branches, of whom the Jharaja with their raja of Cutch, and the Bhatti with their raja of Jeysulmir, are best known.

The three Solar Dynasties are:—

1. Grahilot or Gehlot, with 24 saka or branches, of which the Sesodia is the most distinguished. The rana of Udaipur or Mewar is a Grahilot.

2. Rahtor, said to be descended from Rama by Kusa, his second son. It has 24 branches, and the raja of Jodhpur or Merwara belongs to this tribe.

3. Kachwaha, also sprung from Kusa. The raja of Jeypore is of this tribe. It has 12 kotri or houses.

The Lunar Dynasty is sprung from the moon,

Soma or Chandra, through Yadu or Jadu, and is called Yadu or Jadu. It has eight branches, of which the Jharja and Bhatti in Cutch and Jeysulmir are the most powerful.

The *Agnicula* have 4 tribes and 87 branches, viz. :—

1. Pramara, 35 branches. | 3. Chalukya, 16 branches.
2. Parihara, 12 „ | 4. Chauhan, 24 „

In the 86 royal tribes are others the origin of which is not known, such as—

Chaura or Chawara.	Sarwaya or Sati.	Sengar.
Tak or Takahak.	Aspa.	Sikharwal.
Jit or Jat of the Panjab, Jumna, and Ganges.	Jetwa.	Bais.
Hun.	Kamari.	Dahia.
Kathi.	Dahi.	Johya.
Batta.	Gor.	Mohil.
Jhalamakwahana.	Doda.	Nikumba.
Gohil.	Garhwal.	Rajpati.
	Chandela.	Dahirya.
	Bundela.	Dahima.
	Birgujar.	

The Rajputs in the south and west of Malwa and in Mewar are called Rangari, a name the derivation of which is obscure.

Almost all Hindus who have taken to soldiering, Malrattas, aborigines, and Jats, claim a Rajput origin, a recognition of the superior martial qualities of the Rajput race.

Rajputs of the N.W. hills are ethnologically a much purer and finer race than those on the plains, but even they assert that their ancestors came from Ayodhya or Oudh.

Agnicula Rajputs.—The four *Agnicula* or fire-born tribes, the Chauhan, Solanki, Powar or Pramara, and the Parihara, are now mainly found in the tract from Ujjain to Rewa near Benares. The unnamed progenitors of these races seem to have been invaders who sided with the Brahmans in their warfare, partly with the old Khetri, partly with increasing schismatics, and partly with Græco-Bactrians, and whose warlike merit, as well as timely aid and subsequent conformity, got them enrolled as fire-born, in contradistinction to the Solar and Lunar families, and Mount Abu is asserted to be the place of their miraculous birth or appearance. Vikramaditya, the champion of Brahmanism, according to common accounts was a Powar.

The *Chahaman* or *Chauhan* has been the most valiant of the *Agnicula*, and not of them only, but of the whole Rajput race. Its branches (*saca*) have maintained all the vigour of the original stem; and the Hara, the Kheechi, the Deora, the Sonigurra, and others of the twenty-four, have their names immortalized in the songs of the Bards. The derivation of Chauhan is coeval with his fabulous birth from the four-handed warrior Chatur-bhuja, Chatur-baba, Vira. The Chauhan trace their descent from Prithi-raj. They are found all over the N.W. Provinces, also in Malwa and Rajasthan, in Central India, in Rajor, Pratapnir, Chakarnagar, and Manchana, of which last the raja of Mainpuri is the head, and is one of the highest of the Chauhan clan.

The *Parihara* or *Prithihara* is scattered over Rajasthan, but do not seem to have any independent chieftainship there. At the confluence of the Kohari, the Sind, and the Chambal, there is a colony of this race, which has given its name to a commune of twenty-four villages, besides hamlets, situated amidst the ravines of these

streams. Mundawur (classically Mundodri) was the capital of the Parihara, and was the chief city of Merwara, which owned the sway of this tribe prior to the invasion and settlement of the Rahtor clan. The Parihara is the least of the *Agnicula*. They never acted a conspicuous part in the history of Rajasthan.

It is the general opinion that the old warrior Kshatriya race of Hindus, described by Menu as forming the second of the four Hindu castes, had disappeared, and were not the ancestors of the present Rajputs, to whom, however, from their martial habits, the people accord the Kshatriya's position. And it is recognised that the Rajputs were dominant in the N.W. of India from the beginning of the era of Vikramaditya up to the advent of the Muhammadans in the 11th and 12th centuries. Prithi-raj, a prince who was reigning at Ajmir and Delhi on the second occasion of Shahab-ud-Din of Ghor invading India (A.D. 1193), was aided by the greater part of the Rajput rulers in the attempt to withstand the Muhammadan army, but the Rajputs were overthrown, Prithi-raj taken prisoner, and slain in cold blood, and since then successive invasions from Western Asia have scattered the greater portion of these ancient warrior tribes over the sandy plains of Central India, and have driven their more northern brethren into the fastnesses of the Himalayan range. Among these Rajputs of the Panjab Hills are the Kutoch tribe; they are mentioned by the Greek historians of Alexander's expedition, and spoken of by Ferishta as ruling in Kote Kangra in the days of the Kanouj dynasty, and among all the revolutions which time and war have since made in this country.

The Rahtors, whose seat of dominion was at Kanouj, were for a long time the family whose rule was strongest and most widely extended. In the 11th century, at the time of the conquests of Mahmud of Ghazni, the leading tribes were the Solunkhya of Anhilwara in Gujerat, the Chauhans of Ajmir, and the Rahtors of Kanouj; whilst the Gehlot clan had established itself in Mewar or Udaipur (still occupied by the Sesodias, a sept of the Gehlots), and the Kachwaha clan occupied the eastern tracts about Jeypore. The latter were, however, seriously weakened by the famous feuds between the Solunkhyas and the Chauhans, and between the latter and the Rahtors of Kanouj.

The headship of all the pure Rajputs of the hills, from the Sutlej to the Ravi, has always centred in the house of Kangra, from which many of the local tribes trace their descent. Across the Ravi to the north are other hill Rajputs, who look to Jummo as their head, from whence they derive their generic name of Jumowal. They are somewhat inferior to those of Kangra, though recognised as the chief of the Rajputs in their own district.

When the Arabs invaded Sind, during the khalfat of Walid (A.D. 711), they overthrew Rajput princes of the Summa and Sumra dynasties who were ruling there, but who from that time recovered their position as the Muhammad power waned; and until a comparatively recent period, Rajputs were occupying Jhalawan, now one of the provinces of Central Baluchistan.

During the height of the Rajput supremacy, before their overthrow by the Muhammadans of

Ghor, a Rajput family of the Chalukya tribe reigned at Calian, west of Beder, on the borders of Carnata and Maharashtra. They are traced with certainty by inscriptions from the end of the 10th to the end of the 12th century. Those inscriptions show that they possessed territory as far to the south-west as Banawasi in Sunda, near the Western Ghats, and in one of them they are styled subjugators of Chola and Gujerat. Mr. (Sir) Walter Elliot has published a large collection of their inscriptions, and he is of opinion that they possessed the whole of Maharashtra to the Nerbadda. Professor Wilson thinks that they were also superior lords of the west of Telingana, a prince of which (probably their feudatory) defeated the Chola king, and this is probably the conquest alluded to in the inscription. Another branch of the tribe of Chalukya, perhaps connected with those of Calian, ruled over Kalinga, which is the eastern portion of Telingana, extending along the sea from Dravira to Orissa. Their dynasty certainly lasted through the whole of the 12th and 13th centuries, and, perhaps, began two centuries earlier. It was greatly reduced by the Ganapati kings of Andra, and finally subverted by the rajahs of Cuttack.

For a short interval at the beginning of the 16th century came a brilliant revival of Rajput strength. The last Afghan dynasty at Delhi was breaking up, and Malwa and Gujerat were at war with each other, when there arose the famous Rana Sanga of Mewar, the chief of the Sesodia clan. The talents and valour of this chief once more obtained for his race something like predominance in Central India. Aided by Medni Rao, chief of Chanderi, he fought with distinguished success against both Malwa and Gujerat. In 1519 he captured the Musalman king of Malwa; and in 1526, in alliance with Gujerat, he totally subdued the Malwa State, and annexed to his own dominion all the fine eastern provinces of that kingdom, and recovered the strong places of the eastern marches. Rana Sanga was now not merely the chief of a clan, but the king of a country. The revival was, however, as short-lived as it was brilliant. A month before the capture of the capital of Malwa, Baber, with his Moghuls, had taken Delhi; and in 1527, Rana Sanga, at the head of all the chivalry of the clans, encountered the invader at Futtehpur Sikri, when his army was utterly defeated after desperate fighting, and the Rajput power hopelessly shattered. Next year, Medni Rao, with the flower of his clan, fell in the defence of the Chanderi, which was sacked by Baber. Akbar took to wife the daughters of two great Rajput houses. He gave the chiefs or their brethren high rank in his armies, sent them with their contingents to command in distant frontiers, and succeeded in enlisting the Rajputs generally. Under the early Moghul emperors, the chiefs constantly entered the imperial service as governors or generals,—there were at one time 47 Rajput contingents,—and the headlong charges of their cavalry became famous in the wars of the empire.

In the family wars which resulted in the accession of Aurangzeb, the Rajputs were generally found on the side of their unfortunate kinsman Dara; still even Aurangzeb employed them in distant wars, and their contingents did duty at his capital. He was, however, too bigoted to retain undiminished the hold on them acquired

by Akbar. Though one Rajput chief governed Kābul for him, while another commanded his armies in the Dekhan, he is said to have had them both poisoned. Towards the end of his reign, he made bitter, though unsuccessful, war upon the Sesodias, and devastated parts of Rajputana; but he was very roughly handled by the united Rahtors and Sesodias, and he had thoroughly alienated the clans before he died.

From 1647 to 1680 the great Sivaji founded a dominion in the Dekhan. He claimed to be of Rajput descent, a claim which is now generally acknowledged, and his relatives ruled at Tanjore till 1855, and are still ruling at Kolhapur.

About A.D. 1756, the Mahrattas got possession of Ajmir, being called in by one of the Rahtor factions; and from this time Rajputana became involved in the general disorganization of India. In 1803, all Rajputana, except the remote states of the north-west, had been virtually brought under the Mahrattas, who exacted tribute, held cities to ransom, annexed territory, and extorted subsidies. The victories of Generals Wellesley and Lake permanently crippled Sindia's power in Northern India, and forced him to loosen his hold on the Rajput states in the north-east, with whom the British made a treaty of alliance against the Mahrattas. Upon Lord Wellesley's departure from India, the chiefs of Central India and Rajputana were left to take care of themselves, and in 1814 Amir Khan was living at free quarters in the heart of the Rajput states. The two principal Rajput chieftainships of Jodhpur and Jeypore had brought themselves to the brink of extinction in a claim for the hand of a princess of Udaipur; while the plundering Mahrattas and Pathans encouraged and strenuously aided the two chiefs to ruin each other, until the dispute was compromised upon the basis of poisoning the girl. But in 1817 the Marquis of Hastings was able to carry into action his plan for breaking up the Pindari camps. Amir Khan submitted and signed a treaty which constituted him the first ruler of the existing state of Tonk. By the end of 1818 all the Rajput states had executed treaties with the paramount power.

Individual families and small bodies of Rajputs are now found dispersed through all India proper, and into the Hindu island of Bali in the Eastern Archipelago. Many of the Hindu castes, like the Rachwar in the Northern Circars, claim a Rajput descent. But from Bhattiana northwards, Rajput villages are scattered about in considerable numbers amongst the Jat, and there are traces of more extensive Rajput possessions. The Rajputs seem to be here undergoing gradual submersion. But in the extreme north of the Bari and adjoining doabs of the Panjab, there is a strip immediately under the hills which may be classed with the adjoining hill country as still mainly Rajput. Even in Rajputana proper, though it has Rajputs for the dominant race, the population is much more Jat than Rajput, the Jat extending continuously from the Indus to the Ganges. The great seat of Rajput population and ancient power and glory was on the Ganges. Since vanquished there by the Muhammadans, the principal Rajput families have retired into the comparatively unfruitful country to which they give their name, but where, nevertheless, the Jat forms the most numerous part of the population. Before the Rajputs were driven back from Ayodhya and the

Ganges, Northern Rajputana was partitioned into small Jat republics. The more open parts of Rajputana are shared amongst the Mina, the remains of the Brahman population, the Jat, and the dominant Rajput, but the Jat possess the largest share in the cultivation. The southern and more hilly parts of Rajputana is much occupied by the Mina, the Mhair, and Bhil, and the province of Malwa is occupied by Rajput, Kunbi, and Jat. Rajputs and Jats occupy the plains south of the Salt Range, and seem later immigrants than the Brahmans.

Briefly, the Rajput race now occupy from the north and west of the Panjab, south-easterly to Behar and Benares, and southwards along the left bank of the Indus to Malwa, Gujerat, and Cutch, and give to their south-westerly holdings the name of Rajasthan or Rajputana.

In Rajputana, they are a numerous and dominant aristocracy, organized on the feudal principles necessary to domination. Rajputana lies in the centre of a circuit all round the edge of the more compact mass of the Jat people,—from the Salt Range, through the northern Panjab and adjoining hills, to Rohilkhand, Oudh, and the Central Doab; thence by Bundelkhand through Sindia's territory, Malwa, Mewar, Gujerat, and Kattyawar, into Lower Sind. They are not found in any numbers to the north of the Salt Range, nor are they in any of the hill country west of the Jhelum. But a small Rajput tribe, called Jan-jua, now Muhammadans, is found about the Salt Range. A large proportion of the Rajputs scattered about the Eastern Panjab, Cis-Sutlej territory, and Delhi districts, are now Muhammadans, as are occasional Rajput villages all over Hindustan and a good many Rajput rajas, their conversion having been influenced by the Moghul emperors. But east of Delhi, conversion is quite the exception.

In the N.E. Panjab, near the hills, the Rajput population is more numerous, and Hindu Rajputs are the dominant race in the Jummo and Kangra districts of the Himalaya. The Kangra and Jummo rajas and their clans claim to be of very pure blood, and they are fine handsome men, the Kangra Rajputs in particular; they wear many jewels, and are very fair. The women of the hills are in deserved repute, and much sought after in the plains. The Jummo men, called Dogra Rajputs, are less handsome than those of Kangra, but more robust and brave, quiet, stanch, steady, and reliable, without disagreeable Hindustani airs.

In the valley of the Ganges, the body of the Rajput population lies next to the Jat race to the east; in the Middle Doab, Rohilkhand, and Oudh, and still farther east, the country is shared with a Brahman population. In Lower Rohilkhand, where they are called Thakur, Rajput communities are strong and numerous, also numerous in Western Oudh; but they never largely entered the British sepoy army. In the Central Doab, in the districts of Mainpuri, Futteghur, and Etawa, Rajputs are numerous, and many served in the British native army; but Eastern Oudh, especially most of the broad tract between the Gogra and the Ganges, is the home of the great Rajput population which supplied so large a portion of the Bengal native army. At home these Rajputs are a purely agricultural population. Baiswara, the country of the Bais Rajputs, lies almost parallel

to the Brahman country of the Lower Doab, and furnished many sepoys.

To the east of Oudh, Rajputs are pretty numerous in Azimgarh and Ghazipur.

In the Gangetic valley, the Rajputs spread over a broad region into a large population, and are essentially the cultivators of that valley. Physically, the Rajput and Brahman of that region are not different. The modern Rajput is quite as strict a Hindu, and more prejudiced than many Brahmans, and upon the whole was the worst class in the rebellion of 1857-58.

The Rahtors are probably the most numerous of all the clans; they greatly predominate in the north-west, in the country of Merwara, Bikanir, and Jeysulmir, in the state of Kishengarh, and all about the central district of Ajmir. In Jeysulmir the Bhatti rule. In the north-east states is the Kachwaha clan, very strong in Ulwar and in Jeypore; some districts in the north of Jeypore being altogether in the hands of the Shaikhawat sept of the Kachwahs. The Chauhans, once famous in the history of the north-west of India, are now most influential in the eastern states, where the Hara sept has been long dominant; and the Deoras, another sept of the Chauhans, still hold Sirohi; while the Kbeech also belong to the same stock. In the north-west, the last trace of the ancient predominance of the Chauhans at Delhi is to be found in the petty chiefship of Nimrana, held by Chauhans who claim descent from Prithi-raj; and in the extreme north-west, the Rao of Kusalgarh in Banawara is the head of a Chauhan colony. All over Mewar and the north-western states of Rajputana, below the Aravallis, the Sesodia clan predominates, their head being the Maharana of Udaipur, the eldest family of the purest blood of the whole Rajput caste. Among other clans of high descent and historic celebrity which were once powerful, but have now dwindled in numbers and lost their dominion, may be named the Parihara, the Pramara, and the Solunkhya.

Rajput dominions run south of the Gogra, and thence across the Ganges into the Arrah district (Bhojpur). The chief Rajput districts are Bikanir, Jeysulmir, Merwara, Mewar, Ajmir, Jeypore, Bundi, Kotah, and Malwa.

The clans are of course the aristocracy of the country, and they hold the land to a very large extent either as receivers of rent or as cultivators. As united families of pure descent, as a landed nobility, and as the kinsmen of ruling chiefs, they are also the aristocracy of India.

There are four Rajput chiefs near the Colehan, viz. the rajas of Mohurbunj and Porahat, the Koer of Seraikilla, and the Thakur of Khurawan.

The Rajputs, under the Bengal government, are chiefly to be found in Behar.

Rajputs obtained a footing, and now occupy several estates in the Allahabad district. These incursions of the Rajputs seem to be the foundation of the present proprietary rights in the land. Each pargana has a separate and distinct tribe, although in a few estates other denominations of Rajputs are to be found. The Rajputs seem to have had their particular leaders, who, after locating themselves and their followers, displaced the original inhabitants by degrees, and extended themselves as far as they could. Thus in pargana Jhansi the Bais Rajputs trace their origin to two

leaders, viz. Bowani and Jutan; to the descendants of the former the large estate of Mowaya was allotted, and to those of the latter the nine estates. Some entire mouzahs in each of these taluks were subsequently assigned to different branches of the family, and the remainder held jointly by all, but as they are now divided into separate estates, the holdings are strangely intermixed, as in some of the villages nine taluks have shares, not, however, of any one distinct portion, but they are divided field by field; and as in process of time sales and mortgages took place, and some of the fields became the property of other estates, the intermixture has greatly increased. There are innumerable subdivisions of them in Malwa, and extending from Behar and Benares through the N.W. Provinces of India up to the Panjab.

Mr. (now Sir) George Campbell, writing of them, says they are no doubt of Aryan origin, and are part of a later movement than the branch who came down by the Saraswati, and up to the latest dates have shown themselves a brave people, delighting in war and in bloodshed; and they are not supposed by Mr. Campbell to be the old Kshatriya race, noticed in the early Brahmanical books as existing many hundred years before the Christian era, though they have taken the place assigned to the Kshatriya. They undoubtedly arrived in the north-west of India long after the country had been occupied by Dravidian, Kolarian, and Mongoloid races, and after the north-eastern Panjab and Cis-Sutlej districts seem to have first been a Brahman, then a Rajput country, and subsequently advanced upon by the Jat.

The *Baghel*, also Waghel, is a Rajput tribe in Rewa. The Baghel are a branch of the Sesodia Rajputs of Gujerat, who migrated to the east, and gave their name to Baghelund or Rewa, but others of the tribe have spread through Bundelkhand, Allahabad, Benares, Cawnpur, Gorakhpur, and Farrakhabad.

The *Bais* has obtained a place amongst the thirty-six royal races, though Tod believed it to be a subdivision of the Suryavansi, as it is neither to be met with in the lists of Chund, nor in those of the Komarpal Charitra. It is now a numerous tribe, and has given its name to an extensive district, Baiswara in the Doab, or the land between the Ganges and Jumna.

The Bais intermarry with the Chauhan, Kachwaha, and others. They claim to have come from Manji Paithan in the Dekhan, and to be descendants of its king Salivahana, A.D. 78.

The *Bhatti* are of the Yadubansi race, and rule in Jeysumir, and give their name to the Bhatti country between Hissar and Garhi. It is not clear whether the Bhatti of Bhattiana were originally Rajputs or really are Yuti or Jat.

The *Birgujar*, one of the thirty-six royal races of Rajputs, are settled along the Jumna from Rohilkhand to Matura; some are Muhammadans.

The *Bundela* is a Rajput tribe descended from the Garhwar of Kantil and Khairagarh, who settled in Bundelkhand in the 13th or 14th century, and gave their name to that province.

The *Chahil* or *Chahira* Rajput tribe is now for the greater part converted to Muhammadanism. There are a few in the Hissar district and on the borders of Bikanir. Though Muhammadan, they nevertheless retain charge of the tomb of

Goga Chauhan, a Hindu prince now esteemed a saint.

The *Chandel* Rajput tribe are scattered in various parts of the N.W. Provinces, and for the most part came from Muhoba in Bundelkhand. Before the Muhammadan conquest, Muhoba appears to have been the capital of a principality that extended to the Nerbadda, and included the province of Chanderi, which is called after their name. They are styled Sombansi, but they are not considered to be of pure descent, and their sons are carefully excluded from marriages with the higher clans. This tribe expelled the Baland tribe from Ajori, Burhur, and Mirzapore. They have many divisions, and are supposed to have come from Muhoba in Bundelkhand. They claim to be of the Lunar race, and they give their name to the Chandeli or Chanderi district. There are four subdivisions of them in the Lower Doab, who suffix to their names the regal terms Rao, Rawat, Rao, and Rana.

The *Kachwaha* tribe are the ruling race in Amber of Jeypore. Its raja is a Kachwaha.

The *Dahia* was an ancient tribe whose residence was the banks of the Indus, near its confluence with the Sutlej; and although they retain a place amongst the thirty-six royal races, there is no knowledge of any as now existing. They are mentioned in the annals of the Bhatti of Jeysumir, and from name as well as from locale, we may infer that they were the Dahi of Alexander.

The *Dahima* has left but the wreck of a great name. Seven centuries have swept away all recollections of a tribe who once afforded one of the proudest themes for the song of the bard. The Dahima was the lord of Biana, and one of the most powerful vassals of the Chauhan emperor, Prithi-raja. The brothers of this house held the highest offices under this monarch, and the period during which the elder, Kaimas, was his minister, was the brightest in the history of the Chauhan, but he fell a victim to a blind jealousy.

Dahirya.—The Komarpal Charitra classes this with the thirty-six royal races. Amongst the princes who came to the aid of Cutore, when first assailed by the arms of Islam, was the 'lord of Debeil, Dahir, Despati.' Dahir was the ruler of Sind, whose tragical end in his capital, Debeil, is related by Abul Fazl. It was in the ninety-ninth year of the Hijra that he was attacked by Nassim, the general of the khalif of Baghdad, and treated with the greatest barbarity. Whether this prince used Dahir as a proper name, or as that of his tribe, must be left to conjecture.

The *Dogra* tribe in the N.W. of India are predatory and pastoral, following Muhammadanism, but claiming to be Chauhan Rajputs. The other converted Chauhan, however, believe them to have been Jat and Gujar. The raja of Kashmir is a Dogra. In the 18th century they occupied a considerable tract on the banks of the Sutlej, and made themselves formidable to the Muhammadan government of Delhi.

Jharja Rajputs are dominant in Cutch, but about A.D. 800, a branch of the family, in consequence of intestine feuds, crossed the Runn at the head of the Gulf of Cutch into Kattyawar, and established themselves upon the ruins of the Jetwa Rajputs, and a few petty Muhammadan chieftaincies. The lands appear to have been

divided in common among the whole tribe, the teelat or eldest branch of the family reserving to itself the largest portion, while the bhaiaid or relatives (brotherhood) held their respective villages by a purely feudal tenure.

The *Joyha* race possessed the same haunts as the Dahia, and are always coupled with them. They, however, extended across the Gharra into the northern desert of India, and in ancient chronicles are entitled Lords of Jungul-Desa, a tract which comprehended Hurriana, Bhatnair, and Nagore. This tribe, like the Dahia, was in the beginning of the 19th century extinct.

The *Macheri* Rajput in Mewar were formerly turbulent.

Mohil.—All that can be learned of the past history of this race of Rajputs is that it inhabited a considerable tract so late as the foundation of the present state of Bikanir, the Rahtor founders of which expelled, if not extirpated, the Mohil. With the Malun, Malani, and Mallia, also extinct, it may claim the honour of descent from the ancient Malli, the foes of Alexander, whose abode was Multan (qu. Mohil-t'han?).

Nicoompa.—Of this race, to which celebrity attaches in all the Rajput genealogies, we can only discover that they were proprietors of the district of Mandelgarh prior to the Gehlot.

Raj-Pali.—This race, under the names of Rajpalica, or simply Pala, are mentioned by all the genealogists, especially those of Saurashtra, to which in all probability it was confined. This tends to make it Scythic in origin,—a conclusion strengthened by the derivation of the name, meaning 'royal shepherd'; it was probably a branch of the ancient Pali.

Sikerwal is a tribe which never appears to have claimed much notice amidst the princes of Rajasthan; nor is there a single independent chieftain now remaining, although there is a small district called after them, Sikerwar, on the right bank of the Chambal, adjoining Jaduvati, and, like it, now incorporated in the province of Gwalior, in Sindia's dominions. The Sikerwal was therefore in the early part of the 19th century reduced to subsist by cultivation, or the more precarious employment of his lance, either as a follower of others, or as a common predator. They have their name from the town of Sikri (Futtehpur), which was formerly an independent principality.

Sirvi Rajputs, descendants of Sheopal, dwelling in Merwara, are a harty race of agriculturists.

A Rajput even of the humbler people has a bold and dignified appearance, and their women are singularly beautiful. The tradition of common ancestry has preserved among them the feeling which permits a poor Rajput yeoman to hold himself as good a gentleman as the most powerful landholder. The Rajput proper is very proud of his warlike reputation, and most punctilious on points of etiquette. The Rajput who possesses but an acre of land has the proud feeling of common origin with his sovereign, and in styling him *bapji* (sire), he thinks of him as the common father or representative of the race. 'I am a Rajput,' literally 'I am of royal descent,' is a usual remark: and it is a reflection which lends an air of dignity to all their actions. But in their military organization their constitution is feudal. Each Rajput or Jat is a free citizen, and all

are peers. The Panch or Kratisteuontes (κρατιστευοντες), or, as the British call them, Lambardars, are but the elected representatives of the body of the citizens, and the only general rule is that a village is always represented by a plural number of representatives.

Over great tracts the Rajput are a feeble minority. In some parts, however, the agricultural Rajput villages are strong and numerous, every Rajput is free and equal, the land is divided amongst them, and the commune is administered on democratic principles; wherever this is the case, their institutions resemble those of the Jat race.

One large section of them, chiefly of the Oswal tribe, have become the greatest financiers of India. The mercantile classes are strongest in the northern cities, where are the homes of almost all the petty bankers and traders, who have spread over Central and Western India under the name of Marwari. Perhaps the Oswal section of the Jains, which had its beginning in Rajputana, is the wealthiest among the merchants; and many of the hereditary officials belong to the commercial castes.

Rajputs have clan or tribal names, but too extensively distributed to take the place of family names. In the Lower Doab, the Rajput take the Hindu royal designations of Raja, Rao, Rana, and Rawat. Rajput, son of a raja, is not a term used by all Rajputs. In some parts of their country they call themselves Thakur, which means chief or noble. They are, however, frequently distinguished by the name of their tribe, as Chauhan, Rahtor.

Their practice is not to marry into their own, but into another clan, and this has assimilated the tribes to each other. A marriage within the clan is regarded as incestuous; each clan depends on the other clans for its wives, for no Rajput can take a wife elsewhere than from Rajputs. This has led to much celibacy and to infanticide. Their daughters are married to men of the best tribes, and their widows are not permitted to re-marry, and it is the point of honour as to their daughters' marriages that led to the practice of infanticide.

During the year 1871, an enumeration of the whole of the Rajput population in Oudh was made by native police officers in every village where even a single Rajput family lived. There were found 439 clans or divisions of clans, some of the divisions having only one or two living members. The clans and divisions were distributed over 13,066 villages, containing a total Rajput population of 559,699; and of this number 250,849 were males, and 184,623 females, above 10 years; and 84,200 male, and 60,027 female, children under 10 years. Of all the districts of the province, Roy Bareilly was supposed to be the one in which infanticide prevailed to the greatest extent. In 1075 villages, 10,643 boys under 10 years were living, and only 6619 girls. Roy Bareilly had 71,000 Rajputs in 1075 villages; Unao, 65,000 in 927; and Faizabad, 63,000 in 1565. The jurisdiction of Juggutpore, Roy Bareilly district, with a total Rajput population of 7336 distributed over 145 villages, only had 14 per cent. of female children under 10; there were 3386 males, and 2844 females above 10 years; 1386 boys under 10, and only 238 girls. Here it was that infanticide was considered

to be most common. But the 1881 Census Report inclines to the belief that the children born are largely of the male sex, and this is probable.

Rajputs had high notions of honour, and treated women with great respect. But in their haughty pride, the vices of female infanticide and sati rose to the highest pitch in Rajputana, and girls were destroyed even after attaining adolescence. Major M'Murdo, writing in 1818, mentions that amongst the offspring of 8000 Rajputs, probably not more than thirty females were alive.

In 1810, the rajahs of Jodhpur and Jeypore became rival suitors for a princess of Udaipur, and supported their pretensions by waging war against each other, and the family of the unhappy girl at length terminated the contest by putting her to death.

A prince of Bundi had married a Rajputni of the Malani tribe,—a name now unknown; but a Bard repeating the 'gotra acharya,' it was discovered to have been about eight centuries before a ramification (sak'ha) of the Chauhan, to which the Hara of Bundi belonged; divorce and expiatory rites, with great unhappiness, were the consequences.

Their great desires are to marry their daughters into a clan of a higher rank, and to avoid misalliances. The court of Ranjit Singh furnished a most striking proof of the tenacity with which the Kutoch of Kangra asserts and maintains this superiority. Dhian Singh, the brother of the Maharaja Ghulab Singh, while the prime minister of Ranjit, sought an alliance for his son, Heera Singh, with one of the daughters of the raja of Kangra, but the proud Kutoch deserted his hereditary kingdom rather than, as he thought, degrade his house by intermarriage even with a Mian, or prince of the Jummoo stock. Many chiefs of the clans are said to have wished their daughters married into the Rewa family, and sums up to five lakhs of rupees have been given as a daughter's dot.—*Elph. Hist. of India; Jour. of the Royal As. Soc.*

RAJSHAHI, in lat. 24° 3' to 24° 59' N., long. 88° 20' 45" to 89° 23' 30" E., is a revenue district of Bengal. The Ganges forms its southern boundary. Its population in 1872 was 1,310,729. The Muhammadans numbered 1,017,979; the Chandal, 28,762; the Koch or Rajbansi, 11,625; the Chain, 8802; the Kaibartta, 60,440; and the Jaliya, 16,992. Towards the east, the marshes increase in number and size until they merge in the great Cholan bil on the district boundary. The river system is composed of the network of streams and water-courses which anticipate the confluence of the main channels of the Ganges and Brahmaputra. The Cholan bil is, in fact, a great reservoir for the surplus water supply of the whole surrounding country. It has open connections with the rivers and water-courses, which here lose their identity, and during the rains it swells till it covers a total area of about 120 square miles.

RAJ TARINGINI, a work by Vedyadhar, which gives the various dynasties who ruled at Indraprastha, or Delhi, from Yudhishtira to Vikramaditya. It was compiled under the eye of Siwai Jye Singh of Amber.

RAJUR, a Rajput tribe, said to be of Bhatti descent; they confine their haunts to the desert, or the borders of Jeysulmir, as at Ramgarh, Keallah, Jaraillah, etc., and the thul between Jeysulmir

and Upper Sind. They are cultivators, shepherds, and thieves, and are esteemed amongst the very worst of the converts to Muhammadanism.

RAJ VULA, the chronicle of the reign of Raj Singh, a prince of Mewar.

RAJWAR, a predatory tribe in the Gya and adjoining districts. In Sirguja and the adjoining estates they are peaceably disposed cultivators, who claim to be of illegitimate Kahatriya descent from the Kurmi and Kol. They do not conform to Hindu customs, and they are skilled in the chailo dance, believed to be of Dravidian origin.

RAJWARA, the territory of the raja of Koch-Behar in Rungpur. Here, when the means of individuals prevent them from cultivating their own lands, it was not uncommon to hire out the whole with men and implements, for the use of which one-eighth of the produce was the established consideration.—*Rajasthan*, ii. p. 542.

RAK. SIAMESE. A tree which produces the beautiful varnish valued in the lacquer ware of China.

RAKBA. HIND. In Hindustan, the village area; lands comprised within the boundaries of a village or township.

RAKHI. HIND. An uncultivated or waste tract bearing grass, firewood, and stunted jungle of capparid, dhak, jhand, etc.; also a reserved plantation, a shikargah, a rund, a chuk. Tracts of rakh are to be met with in portions of many districts of the Panjab. In the Lahore district there are no less than 86 such tracts, consisting of plots of uncultivated ground; the total area is 250,000 acres, but not all of this yields wood, a great deal is grazing ground, much of which is quite capable of being brought under cultivation. The great value of the wood-bearing rakhs consists in their being the source from which all the fuel for railway consumption is to be taken. Not only is the upper growth of wood valuable in this way, but the roots that remain in the soil after the stunted growth has disappeared from the surface, are equally capable of being utilized.—*Powell*.

RAKHA. HIND. A watcher or watchman. It is from Rakshan, protection. A village watchman; a person employed for the protection of a village. A hereditary payment, a stipendiary payment or haq, to descendants of former watchmen, in Gujerat called toda geras haq.

RA-KHAING, a race occupying Arakan, towards the embouchure of the Koladyn river, having the Sak, Kumi, and Khyen on their north-east and south. A settlement of Ra-khaing has been made on the Tenasserim coast in long. 98 E., from lat. 13° 40' to 14° 30' N., east of the Moecos Islands. They are a branch of the Burmese who separated themselves from the main stock at a very early period. The people of India call them Mug, a name of Persian or Arabic origin, unknown to the Ra-khaing themselves. They call themselves Myama-gyi, or great Myama. They give their name to Arakan.

Bomzu or Bunzu, called also Bondu, are a tribe of the Ra-khaing who dwell north of the Koladyn river. They have on their north the Lungkata, Kungye, or Kuki in the highlands of Tiperah. The Bomzu and the Kuki seem to belong to the Burman race. The seaboard and the lower portions of the valleys opening

into it, form the country of the Ra-Khoung-tha, or Arakan tribe, of whom the Burmans are a branch. Some are found residing on the banks of the mountain streams, and are distinguished by the name of Khoung-tha. Their language proves that they do not belong to the Yuma group, but are intruders from the north; and their own traditions recognise the Ku-mi as the tribe in possession of the seaboard when they entered Arakan.

The Mrung, in the upper basin of the Mayu and towards the hill frontier of Chittagong, are a colony imported from the Bodo country by the kings of Arakan, at the period when their conquests extended far up Eastern Bengal.

On the south of Assam is the prominent Burmese race, who profess Buddhism, and south of them the British province of Pegu, containing Burmese, Mon, also called Talaing, Khe Karen, Karen-ni or Red Karen, the Khyen, whose women tattoo their faces, the Yet Baing on the Yoma range, and the Shan who form separate communities.—*Mason's Burm.* p. 62.

RAKHIAJ, more properly Rakkhhaj, from which, preceded by the Arabic article (as al Rakhaj), comes the Arachosia of the ancient geographers. Rakhaj, one of the dependencies of Sijistan, the chief town of which, bearing the same name, was situated on the Helmand.

RAKHI. HIND. A bracelet consisting of a piece of thread, or silk, or tinsel, bound by Hindus round the wrist on particular occasions, especially on the Rakhi purnima, or full moon of the month Sravan (July—August), either as an amulet or a preservative against misfortune, or as a symbol of mutual dependence or of respect. A Rajput lady of rank or family sometimes sends it to a person of influence or power, whose protection she is desirous of securing, and whom she thus adopts, as it were, as a male relative or brother.

The Rakhi festival was instituted in honour of the good genii, when Durvasa the sage instructed Salome (the genius or nymph presiding over the month of Sravan) to bind on rakhi, or bracelets, as charms to avert evil. The ministers of religion and women alone are privileged to bestow these wristbands. When the ladies of Rajasthan, either by their handmaids or the family priests, send a bracelet as the token of their esteem to such as they adopt as brothers, these return gifts in acknowledgment of the honour. The claims thus acquired by the fair are far stronger than those of consanguinity. Sisters also present their brothers with clothes on this day, who make an offering of gold in return.—*Tod's Rajasthan*, ii. p. 697; *Wilson*.

RAKHI TANEE. HIND. A dourcur, a vail or vale, a perquisite, a retaining fee.

RAKHWAL or Rakhwar, a guard, a watch, a keeper of a field; watching the crops; a cow or cattle herd; also a person capable of counteracting the evil designs or practices of malevolent beings, or witchcraft and the like.

RAKM, a form of writing character used in enumeration. See Raqm.

RAKSHASA, a term applied by the Aryan immigrants into India to the prior inhabitants whom they found settled there. In the present day, according to the Hindu superstitions, amongst the evil genii of all India, is a being called Rak-

shasa, of giant bulk, terrible teeth, who feasts on dead bodies; a spirit, or demon, or goblin, who appears to be of various descriptions. As a kind of Titan, or enemy of the gods, of the Hindu mythology, he assumes a gigantic superhuman form, after the manner of Ravana and others. He is sometimes represented as the guardian of the treasure of Kuvera, the god of wealth; and sometimes as a cannibal, imp, or goblin, haunting cemeteries, devouring human beings, impeding sacrifices, and disturbing religious people in their devotions. In this last-named character the Rakshasa appear to have waged continual war with men, as the Daitya or Danava did with the gods.

RAKSHASA. HIND., SANSK. An ancient form of marriage amongst the Hindus, where a maiden has been carried off by force after her kinsmen have been subdued or slain.—*W*.

RAKSHASA-LIPI, the running hand of the Mahratta character, meaning Rakshas writing. It is also called Mori.

RAKTA. SANSK. Blood. Raktoka dagi in Mysore is land given free of rent to the family of a person killed in battle. Also the red colour of plants, their woods and flowers.

RAKTA-BALI, blood-offering, a blood sacrifice to an idol. The blood sacrifice of the Hindus and most of the non-Aryan races prevails all over the Peninsula of India, in Mysore, in Hyderabad, in the Carnatic, and Northern Circars. It has different names, and is varied; but whether, as with the Khonds, a human being is sacrificed, or, as with the Pariahs and humbler non-Aryan classes, a buffalo, a bullock, with goats, sheep, kids, or fowls, the rite is identical. The British Government has put down the Khond human sacrifice, and are discouraging the great sacrifices of cattle which occasionally occur. In 1859, 1400 sheep and 50 or 60 buffaloes were sacrificed at the village goddess festival of Ellore. The goddess was carried round the village in a car, at each corner was a sharp wooden spike, on each of which a lamb was impaled alive, and four sucking pigs in the middle.

Amongst the Mahrattas, it is conducted by the helot races,—Mhair, Mhang, and Pawari, and the Dhangar or shepherd,—and all village functionaries attend. A bullock is thrown down before the village deity, its head is struck off by a single blow, and placed in front of the deity, with one fore leg thrust into its mouth. Around it are vessels containing grain, and nearer is a heap of mixed grains, with a drill plough in the centre. The carcass is then cut into pieces, and each cultivator gets a bit to bury in his field.

The blood and offal are collected into a basket containing cooked food, which has already been offered as a meat-offering to the idol (Nai-vedya), the Pot-raj, or worshipping priest, cuts a live kid to pieces over it, as a Hari maria, or plough sacrifice, and, mixing all together, the basket is placed on the head of a Mang, who runs through the town followed by Pariahs, and as he goes scatters handfuls of it to the spirits (bhut-bali).

That is the village offering, but 50 or 60 bullocks and goats may be offered by private persons. Women nude, but covered by leaves and boughs of trees, walk in fulfilment of vows.—*W. E. in J.E.S.*

RAKTA VIJA, an Asura who fought the goddess Chamunda, a form of Durga or Devi. It is celebrated in the Devi Mahatmya.—*Dowson*.

RAKUS TAL, or Tso Lanag, the Salt Lake, in lat. 30° 29' E., and long. 81° 10' N. (referred to Lagan Tunkan, on its southern border), in Gnari Khorsum, is 15,250 feet above the sea.—*Strachey*.

RAL, also Rala. HIND. Dammer, resin, rosin. A general Hindi term for all resin-like substances. The white rosin is the safed ral from the *Shorea robusta*. The black and yellow rosins are called kala ral and zard ral.

RALI. HIND. Red powder from fruit of *Rottlera tinctoria*.

RALLIDÆ, a family of birds, comprising the coots, the water-hens, the rails, the corn-crake.

SUB-FAM. Gallinulæ.

Porphyrio polycephalus, *Lath.*, the purple coot.

Fulica atra, *Linn.*, the bald coot.

Gallix cristatus, *Latham*, the water-cock.

Gallinula chloropus, *Linn.*, the water-hen.

G. Burnesii, *Blyth*, small water-hen.

G. phoenicurus, *Fennant*, white-breasted water-hen.

Podaca personata, *Gray*, Cachaer, Burma, Malacca.

SUB-FAM. Rallinæ.

Porzana akool, *Sykes*, the brown rail.

P. maruetta, *Brisson*, the spotted rail.

P. pygmaea, *Naaman*, the pigmy rail.

P. fusca, *Linn.*, the ruddy rail.

P. zeylonica, *Gmel.*, the banded rail.

P. striatus, *Linn.*, the blue-breasted rail.

P. Indicus, *Blyth*, the Indian water rail.

P. Japonicus, *Schlegel*.

Orex pratensis, the corn-crake.

—*Jerdon*, ii. p. 700.

RAM or Rimmon. HEB. The exalted.

RAMA, among the avatars of Vishnu, in the mythology of the Hindus, are recorded three favoured personages in whom the deity became incarnate, all named Rama. They are distinguished by the names of Bala Rama, usually called Balaram, Parasu Rama or Parasram, meaning Rama of the club, and Rama Chandra or Dasrat Rama, and are all famed as great warriors, and as youths of perfect beauty.

Bala Rama was elder brother to Krishna, and greatly assisted him in his wars; so that, in this instance, Vishnu seems to have duplicated himself, as indeed may be also said of the others, for Parasu Rama and Rama Chandra, otherwise called patronymically Dasrat Rama, were contemporaries. But it has been made a question whether they be not three representations of one person, or three different ways of relating the same history; and whether any or all of them mean Rama, the son of Kush, Sir W. Jones says (*As. Res.* ii. p. 132) he leaves others to determine. He deems Rama, son of Dasarath, to be the same as the Grecian Dionysos, who is said to have conquered India with an army of Satyrs, commanded by Pan; and Dasrat Rama was also a conqueror, and had an army of large monkeys or Satyrs, the general or prince of whom was Hanuman, a name said by this author to mean, with high cheek-bones; others translate it, with bloated cheeks, alluding to his fabled origin from Pavan, regent of the wind. Dasrat Rama is also found to resemble the Indian Bacchus; he is a descendant of the sun, and the husband of Sita; and it is worthy of remark, that the Peruvians, whose Inca boasted of the same descent, styled their greatest festival Ramasitua. Krishna, de-

scribing himself to Arjun as the first of all things, says, 'Among those who carry arms, I am Rama.'

Of Parasu Rama it is related that he was born near Agra, in the Tirtya yug, or second age. His parents were Jamadagni, whose name appears as one of the rishi, and Runeka. He seems to have been a warrior prince, who about B.C. 1176 overran the Malabar coast, introduced an Aryan race from the north, and gave his name to an era used still on the Malabar coast from Mangalore to Cape Comorin. Parasu means a club, and was probably applied to him from his carrying a mace.

In the Rama Chandra avatar, Vishnu appears in the person of a courageous and virtuous prince, the son of Dasarath, the powerful sovereign of India (whose capital, Ayodhya, is said to have extended over a space of forty miles), and employed to punish a monstrous giant, Ravan, who then reigned over Lanka, or the island of Ceylon. The Ramayana contains the heroic description of the battles and lives of all the three Ramas, although it more particularly details the exploits of Rama Chandra, or Dasrat Rama, so distinguished from his royal father, Dasarath. The name of this monarch means, whose car had borne him to ten regions, that is, to the eight cardinal and intermediate points, the zenith, and nadir. He was a descendant from Surya, or Heli, which is a name of the sun in Greek and Sanskrit; and one of his ancestors, the great Raghu, had conquered the seven Dwipas, or the whole earth. But it is not known why a Suryavansa, or descendant of the sun, should be styled Rama Chandra, the latter patronymic referring contradistinguishingly to the descendants of the moon, Chandravansa. In Hindu mythology, however, everything seems, directly or indirectly, to merge in, radiate from, or amalgamate with, the sun, or Surya, in one or other of its names or prototypes. All of the Vaishnava sects agree in stating that, with the exception of Krishna, the potentiality of the preserving power of the deity was never exhibited in such plenitude as in this avatara of Rama. In popularity, and in dramatic, historic, and poetic shapes, it rivals the avatara of Krishna. And as the Gocalastha sect adore Krishna as the deity himself, and draw rules for their religious and moral conduct from the Sri Bhagavata, so the Ramanuj sect similarly clothe Rama in almighty attributes, and deem the Ramayana a complete body of ethics and morality.

Rama Chandra, called also Dasarath, succeeded his father Dasarath as king of Ayodhya. Rama was 34th in descent from Ikshwaku, son of Vaivaswata Manu, the son of the Sun. From Ikshwaku to Rama, of the Suryavansa or Solar race of the sun, was a period of 1200 years. Rama preceded Krishna; but as their historians Valmiki and Vyasa, who wrote the events they witnessed, were contemporaries, it could not have been many years. Rama, of the Solar line of Hindu chronology, is, however, placed by the Brahmins 867,102 B.C., between the silver and brazen ages; but this era was brought down by Sir William Jones to 2029 B.C., and reconciled to the Rama of Scripture. Rama's brothers were Lakshmana, Bharata, and Satroghana, but he has been variously supposed to have lived 2029 B.C.; Jones; 950, Hamilton; and 1100, Tod; and according to Bentley, he was one year old in 960 B.C., born 6th April 961.

Rama possessed a powerful kingdom in Hindustan, and invaded the Dekhan, penetrating to the island of Ceylon, which he conquered. Sir William Jones places the subjugation of India by Rama about the year 2018 B.C. In his time and that of his father Dasarath'a, astronomy was much cultivated; and it is supposed (not without much probability) that the first astronomical tables for computing the places of the planets were constructed on the observations made in Rama's time. There was an eclipse of the sun on the 2d of July of the year 940 B.C., which, according to Mr. Bentley, may be referred to with certainty as an epoch of Rama's reign.

Rama married Sita, daughter of raja Janaka, king of Mithila. He gained her by breaking the great bow, and their stories are told in Valmiki's epic, the Ramayana.

From Rama, all the Hindu tribes termed Suryavansa, or race of the sun, claim descent, as the present princes of Mewar, Jeypore, Merwara, Bikanir, and their numerous clans; while from the Lunar (Indu) line of Budha and Krishna, the families of Jeysummir and Cutch (the Bhatti and Jareja races), extending throughout the Indian desert from the Sutlej to the ocean, deduce their pedigrees. Rama, king of Oudh, is almost the only person mentioned in the Hindu traditions whose actions have something of a historical character. He is said to have been at first excluded from his paternal kingdom, and to have passed many years in religious retirement in a forest. His queen Sita is said to have been carried off by the giant Ravana; for her sake he led an army into the Dekhan, penetrated to the island of Ceylon, of which Ravana was king, and recovered Sita, after a complete victory over her ravisher. In that expedition his allies are fabled to have been an army of monkeys, under the command of Hanuman, whose figure is frequently seen in temples, and who, indeed, is more worshipped in the Dekhan than any of the other Hindu gods. Rama's end, however, was unfortunate, for, having by his imprudence caused the death of his brother Lakshmana, who had shared with him in all his dangers and successes, he threw himself, in despair, into a river, and, as the Hindu say, was reunited to the divinity. He still, however, retains an individual spiritual existence, as is shown by the separate worship so generally paid to him. Rama is represented in his natural form, and is an object of general adoration. He is usually described as a green man, seated beneath an umbrella, the emblem of sovereignty, on a throne; a quiver of arrows hangs at his back; in one hand he holds his destructive bow, and in the other a flower of the sacred lotus. By his side is placed Sita, who is depicted as a goddess of transcendent beauty, of a deep yellow complexion.

The following passage, taken from the Uttara Rama Cheritra, affords an idea of the costume of the warrior race in ancient times. Janaka, the father of Sita, the heroine, is describing the hero Rama:—

'You have rightly judged
His birth; for see, on either shoulder hangs
The martial quiver, and the feathery shafts
Blend with his curling locks. Below his breast,
Slight tintured with the sacrificial ashes,
The deer-skin wraps his body, with the zone
Of murva bound; the madder-tinted garb

Descending vests his limbs; the sacred rosary
Begirds his wrists; and in one hand he bears
The pipal staff, the other grasps the bow.'

—*Prinsep*, p. 215; *Elph. India*, i. pp. 103, 389; *Warren, Kala Sanhita*; *As. Res.* i. p. 426, iii. p. 68, ix. p. 239, xiv. p. 382; *Gita*, p. 86.

RAMA-DASA, the religious preceptor (guru) of Sivaji.

RAMA DEVA, author of the Vidvan Moda-Tarangini, or fountain of pleasure.

RAMAGRAMA, a famous city between Kapila and Kusinagara, identified with Deokali. According to the Mahawanso, the relics at Ramagrama consisted of only one Drona measure, which, after being enshrined by the Nagas at Majerika, were carried off to Ceylon in the fifth year of the reign of Duththagamini, 157 B.C., by whom they were enshrined in the Mahathupo or great stupa at Ruanuelli.—*Cunningham, India*, p. 535.

RAMAH, called by the natives Ramla, is situated in a fertile plain that formerly belonged to the Hebrew tribe of Ephraim. It is supposed to be the same as the ancient Arimathea to which that Joseph belonged, who, having begged the body of Jesus from Pilate, took it down from the cross, wrapped it in linen cloth, and laid it in his own new sepulchre. The monks there have a tradition that their chapel is built on the site of the house wherein he dwelt.—*Robinson's Syria*, i. p. 28.

RAMAL, ARAB. Sand. The method of divination by it is scattering a quantity on a board, over which certain ceremonies have been performed, and then reading the characters. The person thus officiating is called Kummal. Ilm-ur-Raml, the divination by sand, in great vogue among Muhammadans, many elaborate treatises having been written on the subject. Many unequal lines are drawn on the sand, upon which are disposed a certain number of points, from the combinations of which they pretend to foretell future events. They claim for its founders, Enoch, Shem son of Noah, and Daniel. Qurua or Kuruh means a lot, and means a form of divination. It is practised in different ways, but most frequently by bones of a dead man cut in the shape of dice, and marked with hieroglyphic characters. These are thrown by the person wishing to know his destiny, and the fortune-teller explains the result. Raml-ul-Jumar, the Muhammadan ceremony of throwing gravel by the pilgrims near Mecca.—*Pottinger's Travels*, p. 154.

RAMA-LILA. SANSK. A dramatic epitome of the adventures of Rama. They are performed publicly in the month Aswin, and in some places with great splendour.—*W.*

RAMANANDA, a religious reformer of the Vaishnava sect, who is considered by some to have been an immediate disciple of Ramanuja, by others the fifth in descent from that religious teacher, and to have lived about the middle or end of the 14th (A.D. 1350) or beginning of the 15th century. He is said to have seceded from the Ramanuja sect, because of an accusation of laxity in their custom of taking meals. His residence was at Benares, at the Pancha Ganga Ghat, where a math or monastery of his followers is said to have existed. The special object of their worship is Vishnu, in his incarnation as Rama Chandra and his consort Sita, either singly or jointly; but other forms of Vishnu are

worshipped by them, and the religious mendicants of the sect consider all forms of adoration superfluous, except incessantly invoking the names Krishna and Rama. He instituted no nice observances, he admitted all classes of people as his disciples, and he declared that the true votary was raised above mere social forms, and became free or liberated. He abolished the distinction of caste among the religious orders, and taught that a Viragi who abstains from the ties of nature and society, shakes off at the same time all personal distinctions. The initiatory formula is Sri-Rama, blessed Rama. The sectarian mark on the forehead is almost the same as that of the Ramanuja sect. There are various subdivisions of this sect, but all friendly with each other and with the Ramanuja. Most of the Vaishnava sectarians of Northern India follow the teachings of Ramananda; they are numerous in Gangetic India, and direct their worship to Rama Chandra and Sita. He was the first to admit low caste men as his disciples, amongst whom are mentioned Kabir, a weaver; Asanand; Rai Das, the Chamar; Sena, a barber; Dhunna, a Jat; Pipa, a Rajput; and the Ramawat poets, Sur Das and Tulsi Das. The rani of Chetori Jhali was a follower.—*Garrett; Outh Census Report*, p. 116; *Cal. Rev.* No. 109.

RAMANANDI or Ramawat, a Hindu sect founded by Ramananda. Wilson, in his *Hindu Sects*, says they are usually considered a branch of the Ramanuja sect of Vaishnava, who worship Vishnu as Rama Chandra, and reverence all the incarnations of Vishnu, but maintain the superiority of Rama (hence their name, Ramawat) in this Kaliyug age. They worship, singly or collectively, Rama and Sita, or Sita Rama. In his *Glossary* he says the Ramanandi are a sect of Vaishnava ascetics, who dwell in mat'hs or monasteries. They are particularly numerous about Benares. They follow the teachings of Ramanuja, Ramananda, and Madhavacharya. They admit into their fellowship people of all castes, but the acolyte must first have adopted the views of those teachers, and have had his arms and body marked with the sankha or shell, the gada or club, the chakra or discus, and the lotus flower, symbols of Vishnu; the brass figures being heated for that object. The tilak with which they mark their foreheads is shaped so, ω , the outer red strokes being from the chandan (*Pterocarpus Santalinus*) or roli (*Rottlera tinctoria*). Sherring says (p. 267) that only Brahmans and Kshatriyas are now admitted into the sect.—*Wilson's Hindu Sects*; *Wilson's Gloss.*

RAMANDROOG or Raman Mallay, a hill 37 miles west from Bellary, about $1\frac{1}{2}$ miles long, $\frac{3}{4}$ of a mile broad, and 3190 feet above the sea-level. It is in lat. $15^{\circ} 7' N.$, and long. $76^{\circ} 29' E.$ Climate cool, invigorating, and healthful, 13° to 14° degrees cooler than Bellary; the table-land is 2735 yards long, by extreme breadth 996 yards. In 1846, Drs. Macdonald, Godfrey, and Balfour reported on it as a sanatorium, the latter unfavourably. A few officers and soldiers visit it in the hot weather, but as it is subject to the S.W. monsoon like Mahabaleshwar and Chikaldah, it is always deserted early in June. Ramandroog is situated in the Native State of Sandur, a small principality in the Bellary district. In 1846, permission was obtained from the raja to establish a sanatorium here, and a tahnamah was executed

ceding to the collectorate of Bellary criminal jurisdiction to a limited extent on the Droog.

RAMAN PAJJ, the native name of the Great Bases, rocks of the Ceylon coast.

RAMANUJA, styled Sri Bhashyakar, a philosopher, the founder of the Sri Vaishnava sect of Hindus, is sometimes supposed to be identical with Yembara Manmar, the last of the *Liyar*. His philosophy is the so-called Visishtadwaita system. He was born at Stripermatur, 25 miles west of Madras, about the early part of the 12th century, and was educated at Kanchi or Conjeveram, where also he taught his system of the Vaishnava faith. He afterwards resided at Sri Ranga (near Trichinopoly), worshipping Vishnu as Sri Ranga Natha, and there composed his principal works. He then visited various parts of India, disputing with the professors of different creeds, overcoming them of course, and reclaiming various shrines then in possession of the Saivas for the worshippers of Vishnu, particularly the celebrated temple of Triputtty. On one occasion, Ramanuja was compelled by persecution to flee to Mysore, where he converted Vitala Deva the Jaina sovereign, and others to Vaishnavism. After twelve years' absence, on the death of the Chola king, his persecutor, Ramanuja returned to Sri Ranga, where he spent the remainder of his life. He was a voluminous writer. He is said to have been able to introduce the worship of Vishnu into Triputtty in N. Arcot; to have founded 700 mat'hs or religious monasteries, one of which still exists at Mail Cottah in Mysore; he also established 74 hereditary offices of guru, the representatives of which still exist at Conjeveram. The followers of Ramanuja in Mysore still are to be seen as a separate class, speaking Tamil in their families and Carnatica in public. His followers are known as the Ramanuja or Sri Sampradaya sect. Their worship is addressed to Vishnu or to Lakshmi and their incarnations, and they assert that Vishnu is the supreme cause. They draw their doctrines from Vedanta works, the Vishnu, and other Puranas. They are scrupulously secret in the preparation and consumption of their meals.

RAMASANTIRA KAVIRAYAR was born at Rajanellur, but lived at Madras, where he died in the middle of the 19th century. He wrote the dramas Sakantati Vilasam, Parata Vilasam, Taruka Vilasam, Iraniya Vasakappar, and Irankum Sandai Nadakam.

RAMASAWMY, a Hindu name very common in the south of India; a silver cigar-lighter.

RAMA SITA, Rama's Bridge, Adam's Bridge, rocks between Ceylon and the Peninsula. Rama Sita, a title of the Inca of Peru.

RAMAYANA, the older of the two great epic poems of the Hindus, and that in which the principal hero is Rama. Three versions exist of this book, one supposed to have been composed by Valmiki, one by Tulsi Das, one by Vyasa. That of Vyasa is known as the Adhi Atma Ramayana. The story of the Ramayana has some resemblance to that of the Iliad. Sita, the beautiful wife of the hero Rama, is carried off by the giant Ravana to the island of Lanka or Ceylon, whither Rama follows him, and after a variety of adventures recovers his spouse, and subsequently recognises his two sons, Kusa and Lava.

The reef across the Straits of Manaar is called Rama's Bridge; and the legend says that Rama

Situ threw the rocks which compose it into the sea. The bare story of each epic is probably historical. Bentley assigned the Ramayana to the 4th century of the Christian era. The scene is laid in Oudh. It describes his youthful days, his education and residence at the court of his father, Dasaratha, king of Ayodhya, his marriage with Sita, and his inauguration as heir apparent; 2dly, the circumstances that led to his banishment, his exile and residence in the forests of Central India; 3dly, his war with the giants or demons of the earth for the recovery of his wife, Sita, who had been carried off by Ravana, king of Ceylon, his conquest and destruction of Ravana, and his restoration to the Oudh throne. The first two parts contain little of extravagant fiction, but in the third part there is the wildest exaggerations and hyperbole, the subject being the conquest of the parts then conquered and pertaining to Brahmanic India, and of the island of Ceylon. With its other subjects, the Ramayana describes the forest or wilderness of Dandaca as covering the whole extremity of the Southern Peninsula, and the rude inhabitants are designated Rakshasha (monsters), or Vanara (monkeys), the former meaning races or tribes hostile to the Aryans. The word Vanara is from Vana, a wilderness, and Nara, a man,—that is, a wild or uncivilised man; and to this sense, as to the wild races in the extreme south, the fable of Hanuman, the chief monkey, and that of his army, Mr. Taylor thinks may be reduced. He says that those who have seen the Collieri and Marava will readily consider them to differ from all family likeness of the Aryan Hindus, and as their visages often resemble baboons more than men, it would require even less than the ardent poetical imagination of a Valmiki to induce the employment of an equivalent word which would so aptly seem to convey the idea imparted by their appearance.

The name is from Rama, and Ayana, to go. Ramayana has seven kanda or books, and 24,000 sloka, or about 48,000 lines. Mr. Fergusson supposes that the events it details occurred 2000 B.C., and those of the Mahabharata about 1200 B.C.

RAMAZAN or Ramadan, the 9th month of the Muhammadan year, each daytime of which is observed as a strict fast, with abstinence from all sensual gratifications from the dawn of day to sunset, as well from chewing betel leaves, or taking snuff, or swallowing the saliva. The excellence of this month was much extolled by Mahomed, and it is undoubtedly a time of solemn trial of a believer's integrity. The sick, the infirm, pregnant or nursing women, the young who have not reached puberty, and travellers are exempt. The fast is extremely rigorous and mortifying, a drop of water, even the moisture of the mouth, must not be swallowed; the death of young persons even occurs from this austerity. The devout Muhammadans seclude themselves for some time in the mosques, abstaining from all worldly conversation, and reading the Koran. The 21st, 23d, 25th, 27th, or 29th of the month are sacred nights, and the 27th is the night of power, Lailat-ul-Kadr, during which 'all is peace till the breaking of the morn.' It is frequently confounded by writers with the Shab-i-Barat. The nights of the Ramazan, from sunset till dawn, may be passed in lawful enjoyments. Breakfast is from 4 to 4 A.M. Ramazan-ki-Eed or Eed-ul-Fitr

(the feast of alms), the feast of the Ramazan, is held on the first day of the month Shawal. Ali, son-in-law of Mahomed, is said to have died on the 20th or 21st of this month; and the 27th is the Lailat-ul-Kadr, or night of power, on which the Koran is said to have descended from heaven. It should be observed as a vigil. The Ramazan ends with the Eed-ul-Fitr.

RAMBHA. HIND. A sort of flat trowel or hand-hoe, like the khurpa of Hindustan. It is used in rice-fields; it is also the name of a chisel with slanting edge for leather cutting.

RAMBHA, in Hindu mythology, an apsaras or nymph produced at the churning of the ocean, and the type of female beauty.—Dowson.

RAMBODDE, near Newera Elia in Ceylon, presents superb cascades in the rainy season.

RAMBOWE, a Malay State, N. and E. of Nanning and Salangore. It has two divisions, Rambowe Ulu and Rambowe Ilir, each under its own four suku or heads of tribes, and all subject to the control of one panghula, who resides at Chembong. Besides Malays, are several aboriginal tribes inhabiting the slopes of the mountains and the forests, who subsist by hunting, to whom the resident population apply the general terms Orang Benua; they are the Udai, Sakkye, Jakun, and Kayet Utan. Their hair is sometimes straight like that of the generality of Asiatics, but more frequently curling, at the same time very different from the frizzled locks of the African. Their stature is short, but they do not differ much in features and complexion from the Malay. They bear little resemblance to the Semang in the interior of Quedah, or to the thick-lipped, woolly-haired Papuan. Malays entertain a high opinion of the medical skill of these tribes, who are to be found over the whole of the interior of this part of the Peninsula, particularly in Ulu-kalang, Sungi Ujong, Johole, Jompole, Jellabu, Ulu Muar, and Segamet. The tribes of Rambowe Ilir are Battu Ampar, Payu Kumba Barrat, Munkal, Tiga Nenik. Those of Rambowe Ulu are Paya Kumba Darrat, Battu Ballang, Sa Melongang, Sri Lumah.—*Newbold's Malacca*, ii. p. 122.

RAMBUTAN. MALAY. The fruit of Nephelium lappaceum, the name being from Rambut, MALAY, the hair of the head, in allusion to its villous covering. The fruits of N. litchi and N. longana are also prized. N. hypoleucum, N. rubescens, and N. stipulaceum are also known.

RAM CHANDAR KI KUP, mud volcanoes or mud wells in the bed of the Aghor river in Mekran. See Oritæ; Volcanoes.

RAM CHANDAR ROY, under the direction of H. T. Prinsep, compiled a General Register of the Honourable East India Company's Civil Servants on the Bengal Establishment from 1799 to 1842, Calcutta 1846.

RAMESSES II. was the Pharaoh who oppressed the Israelites, but Menephthah was Rameses I., and was reigning at the Exodus. His tomb is in the valley of kings' tombs near Thebes. The name of his son and successor is variously written in the hieroglyphics. See Egypt.

RAMESWARA, one of the twelve great lingas of the Hindus; this one gives its name to Ramisseram, written Rama Iswara.

RAMGANGA RIVER, rises among the outer Himalayas, in lat. 30° 6' N., and long. 79° 20' E. Flows for about 100 miles through the hills of

Garhwal and Kamaon, with a very rapid fall; enters the plains at Kalagarh in Bijnaur district.

RAM GHAT, a ghat or pass through the mountains of the Western Ghats, leading from Belgaum to the Arabian Sea.

RAMI, also called Tali Rami. MALAY. The China grass, *Boehmeria nivea* or *Urtica nivea*, a nettle the bark of which furnishes a thread remarkable for strength and durability. Rami-China, i.e. 'Chinese Rami,' a name given by the Malays to the jute, *Corchorius olitorius*; also to the true hemp, and to the *Urtica nivea*.—*Royle*.

RAMISSERAM is a small island 8 miles long, situated between Ceylon and the continent of India, at the entrance of Palk's Passage in the Straits of Manaar, where there stands a very ancient pagoda, and formerly an observatory. It was found by Colonel Lambton's Survey to lie in lat. 9° 18' 7" N., and long. 79° 22' 5" E. Many Telugu and Tamil astronomers, as Baladityacalu and Mallicarjanadu, refer their computations to the meridian of Rameswara. It is in a line with the island of Manaar, near Ceylon, which forms the Adam's Bridge, and is famed throughout India as a place of Hindu pilgrimage. It is united by a bank of sand to the island of Manaar. Hindu pilgrims resort to Ramisseram from remote parts of India; its celebrated temple is sacred to Vishnu in his avatara of Rama called Rameswara, or in its neighbourhood is called Ramisseram, conformably with the Tamil and Canarese termination of names ending with a vowel or a liquid.

The pagoda in the island of Ramisseram is said to have been founded by Rama after his invasion of Ceylon. It has two lingams, one which Sita is said to have made, and one which Hanuman is said to have brought from Mount Kailasa. There is one complete goparum, about 100 feet high, covered with figures relating to the Hindu mythology; it is on the west. Other three doorways are 19 feet high, composed of single upright stones, with others laid across at the top. Inside the gate is a magnificent colonnade. It runs along the four sides of the quadrangle, from N. to S. 353 feet, and E. to W. 671 feet, by 17 feet in breadth. It is the most remarkable structure of its kind in India. The ceiling is composed of large slabs of granite, supported by numerous carved granite pillars, each 12 feet high, raised on each side on a platform 5 feet high. Most of the pillars are single blocks of stone, all brought from a distance of 40 miles. The annual revenue of the pagoda is Rs. 40,000. The glory of the temple is in its corridors; these extend to a length of 1333 yards, from 20 to 88 feet broad, and from the floor to the centre of the roof about 30 feet in height. The inner prakaram or corridor is said to have been constructed by a Naik ruler of Madura, and the sokkatan or mantapam outside was raised by two of the Setupati of Ramnad. Each pillar is compound, and is richer and more elaborate in design than those of the Parvati porch at Chedambaram, and more modern in date.—*Moor; Ferguson*.

RAMJANI. In Benares, a Hindu tribe of professional musicians. They wear the sacred cord, and call themselves Kshatriyas, but in social position there is a great difference between them and the Kathaks. The Muhammadan dancing girls are often called Ramjani.

RAM KOMOL SEN, a native of Bengal, the author of a Bengali and English dictionary; obit 1843.

RAM MOHUN ROY is the only great mind to whom modern Bengal can point. He was the first great modern theistical reformer of British India. He was born about 1774, at the village of Radhanagar, in the district of Murshidabad. His father was a Brahman, and his grandfather had held office under the Moghul emperor. Brought up as a child in the popular Hindu faith and piety, he became as a boy disgusted with its extravagant mythology, and at sixteen composed a spirited tract against idolatry. He was persecuted, and fled, first to Benares, the stronghold of Brahmanism, afterwards to Tibet, that he might converse with the Buddhist priests, being determined to study each religion at the fountainhead. Probably he was the earliest earnest-minded investigator of the science of comparative religion that the world has produced. As he studied the Vedas in Sanskrit, so he was believed to have approached the Buddhist Bible, the Tripitaka, in the original Pali. He mastered Arabic that he might read the Koran; and later in life learnt Hebrew, and began Greek, that he might the better know the Old and New Testaments. Returning home at about twenty years of age, he seems to have been reinstated in the favour of his family, and returned to his Sanskrit studies and the examination of his ancestral religion. He was too logical to be deceived by Brahmanical sophistries, yet he was wont to say he found nothing elsewhere equal to the Hindu scholastic philosophy. Then, too, he learnt English, and shook off his prejudices against European society. After his father's death in 1803, he became bolder in his controversies with the Brahmans, and published various works against Hinduism, his antagonism to idolatry becoming more and more marked. He maintained that the worship of idols was not sanctioned by the oldest national sacred books, and aroused general attention by insisting on the absence of all Vedic sanction for the self-immolation of widows (sati). The agitation set on foot by him against sati ultimately led to its abolition by law throughout British India in 1830. Ostracised by his own social circle, he had retired to Calcutta in 1814, and there, having been joined by Jains and Hindus of rank, wealth, and influence, among them being Dwarkanath Tagore, formed in his own house in 1816 the Atmiya Sabha, or Spiritual Society. Becoming more and more impressed with the sayings of Christ, he published in 1820 a book called *The Precepts of Jesus*, the Guide to Peace and Happiness. Being shown a picture of Christ, he said the painter had falsely given him a European countenance, whereas Jesus was an oriental, and that the Christian Scriptures glowed throughout with rich oriental colouring. He strongly opposed the doctrine of the Trinity, arguing that it was polytheistic, and to the last his Unitarianism was strongly marked. His idea of inspiration was that it was co-extensive with the human race.

The beginning of January 1830 inaugurated a new era in the history of Indian religious thought, ushering in the dawn of the greatest change that has ever passed over the Hindu mind. Then was opened in Calcutta the first Hindu theistic church, called the Brahma Sabha, or Brahmya Samaj,

that is to say, 'the assembly or society of God.' Ram Mohun Roy visited Britain in April 1831, being the first native of rank and influence to cross the 'black water.' Here he stayed until his death at Bristol, on 27th September 1833. His Brahmanical thread was found coiled round his person when his spirit passed away. His successor was the son of his friend Dwarkanath Tagore. This remarkable man, Debendranath Tagore, like his predecessor, aimed at being a purifier rather than a destroyer. It was not until 1843 that he formally joined the church founded by Ram Mohun Roy. He saw that organization was needed if the Samaj was to hold its ground as a permanent church in India, and he himself drew up the Brahma covenant, consisting of seven solemn vows, to form the bond of union among its members. They bound themselves to abstain from idolatry, to worship no creature, but to worship, through the love of God, and through the performance of the works God loveth, the Great God, the Creator, Preserver, Destroyer, the Giver of Salvation, the One only without a second; to lead holy lives, and to seek forgiveness through abandonment of sin. The year 1844 might be given as the date of the real commencement of the first organized theistic church of India, hence called the Adi-Brahma-Samaj. In three years the covenanted members numbered 767, and in three years more kindred societies had sprung up in not a few Indian provincial cities, though meanwhile controversies had broken out which led Debendranath to put forth a new theistic directory. — *Monier. Williams on Indian Theistic Religion; Rajasthan*, ii. p. 642; *Marshman's Defence of the Deity and Attonement of Jesus Christ*, London 1822; *Calcutta Review*.

RAMNA. HIND. A park; a game preserve; grass lands. It is this word that the gypsies in Europe take to themselves as Rāmna-chāl, dwellers of the Ramna.

RAMNAD or Rama Natha-Puram, in lat. 9° 22' 26" N., and long. 78° 52' 9" E., gives its name to a large zamindari in the south of the Peninsula of India, situated between lat. 9° 3' and 10° 2' N., and long. 78° and 79° 24' E., covering an area of 1900 square miles, but half of it is sand, waste land, and water. It is the S.E. portion of the Madura district. It and Shiva-ganga are occupied by the Maravar race, to whose care Rama is believed to have delivered over the temple of Ramisseram. About A.D. 1880, the Ramnad chief declared himself independent, but during the contests for supremacy in the 18th century, Shiva-ganga was separated about A.D. 1729; and finally, in 1801, when the country was ceded to the British, it was declared a zamindari. Ramnad was stormed by General Smith in 1772. The district has gentle undulations. Near the sea-coast towns are extensive groves of palmyra and cocoanut palms. It has several rivulets and streams, and several tanks or lakes. The chank shell fishery yields a revenue. Population (1871), 15,442. Within the fort, the majority of the inhabitants belong to the Vallalar and Maravar castes. The Vaigar river, which waters Madura, supplies the large tank at Ramnad, capable of irrigating over 6000 acres of land. The total number of tanks in the zamindari is 1767.

RAM NAOMI is a nine-day festival in honour of the birthday of Rama Chandra at Oudh, B.C. 1400?

and is held from the 1st to the 9th of Chaitra, about 12th April. During the nights of the nine days, Kirtan is preached, the Ramayana is recited, sprinkling with the red gūl powder, and nautching. Rama is said to have become incarnate at noon of the 9th day, the object being to destroy Ravana, the ten-headed tyrant of Lanka or Ceylon, and which he effected with the aid of Hanuman, the chief of the monkey tribe. On the Ram Naomi, the images of Rama in the temples are decorated with ornaments and brocade, and at noon the image is brought out, as if then incarnate, and put into a cradle, on which there is much rejoicing and throwing of gūl. Rama is commonly believed to be an incarnation of Vishnu, and the observances of the Ram Naomi are chiefly performed by worshippers of Vishnu.

RAMOTH GILEAD, a small town of 6000 people, the modern Es-Salt. It is in the most favoured district in Palestine.

RAMPUR is the chief town of the Rampur State, N.W. Provinces of India, in lat. 28° 48' N., long. 79° 4' E.; population (1872), 68,301. It is built on the left bank of the Kasila river, surrounded by a belt of bamboos, trees, and brushwood, with a low, ruined parapet. It is famed for damask and for its fine shawls, known in commerce as Rampur chadars. The Rampur State lies between lat. 28° 26' and 29° 10' N., and between long. 78° 54' and 79° 33' E. Bounded on the N. and W. by the Moradabad district, and on the N.E. and S.E. by the Bareilly district. Its area, 945 square miles; and population (1872), 507,004. — *Imp. Gaz.*

RAMPUR BEAULEAH, the chief town of the Rajshahi district in Bengal. It is situated on the north bank of the Ganges, in lat. 24° 22' 5" N., and long. 88° 38' 55" E.; population (1872), 22,291. The mean height of the station is 56 feet above the sea. — *Imp. Gaz.* vii.

RAM RAM, an exclamation, or salutation, or invocation. It is proper to be addressed to a Vaishnava ascetic. Amongst Mahratta Sudras, it is the usual exclamation of greeting, and is a Hindu salutation equal to the salam alaïkum in use amongst Muhammadans.

RAM RAZ, a Hindu author on architecture.

RAMRI or Yambie, or New Island, forms the N.E. side of Cheduba Strait. It is 40 miles long and 15 broad, of moderate height near the sea, and extends N.W. to Saddle Island in lat. 19° 26' N., on the north side of which is the entrance to Khyouk-Hpyu harbour. From its southern point, the islands of Amherst or Juggu, Adam Hill, Wyndham, and Harrison project in a chain. Ramri town is in lat. 19° 6' 36" N., and long. 93° 53' 45" E. It has many wells of petroleum or earth-oil, generally situated near the bases of low hills, and of various depths. The deepest is said to be about 50 feet, having about 6 feet diameter at the mouth. The sides of this well have been ingeniously boarded by the natives, having diagonal cross bars, which not only secure the structure but serve as a ladder. There is no sort of machinery used to get up the oil. A young lad is first sent down, a man on the cross bars lets down to him earthen pots in succession, into which the contents of the well are filled, and then the pot is drawn up. The whole of the contents of the pot, as drawn up, is not oil, which is of a light bluish colour, and floats on water; there is sedi-

ment scooped up from the bottom. This takes place twice a day, and the yield is from four to six gallons per day. The oil sells in the bazar at a rupee per gallon. The deepest of the wells in the island is in the Laytounge Circle, and is said to have been productive for a great number of years. Natives have been known to dig wells of short depths for temporary purposes, after which the wells are abandoned, and soon choke up from the falling in of the earth. There is a fish found in these waters called Luckwa, the oil extracted from the liver of which is said to have the same properties as cod-liver oil. The island lying about two and a half miles to the westward of old Khyouk-Hpyu is called on old marine charts Saddle Island from its shape. When Khyouk-Hpyu was a military station, some of the officers, it is said, let loose thereon a pair of goats; these have increased to such an extent that the island now abounds with wild goats, and hence it is now called by natives Chy-Kyscr or Goat Island.

RAMSANEHI, or Friends of God, a sect of Hindu schismatics in Western India.

RAM TCHU, a lake frequented by great abundance of water-fowl, wild geese, ducks, teal, and storks, which, on the approach of winter, take their flight to milder regions. Prodigious numbers of the saras, the largest species of the crane kind, are seen here at certain seasons of the year, and any quantity of eggs may there be collected; they are found deposited near the banks; they are as large as a turkey's egg.—*Turner's Embassy.*

RAMTEK, 24 miles N. of Nagpur, in lat. 21° 24' N., and long. 79° 20' E., population 7045, has ever been, amongst the Hindus, a chosen seat of religious veneration. Of the many old temples, the oldest appears to be one in a small dell on the north side of the hill. It is built of hewn stones, well fitted together without mortar. From its shape and structure it is probably of Jain origin, though local tradition would make it the work of one Hemarpanth, by some said to have been a Brahman, by others a Rakshasa, with whose name many remains of buildings in the Bhandara and Nagpur districts are connected.

RAMUSI or Ramoosi, a race who have crossed into the west of India, and there assumed predatory habits. They speak the Telugu tongue in their families, but have acquired Marathi. They are in small numbers west to Bombay, southwards to Sholapur, and northwards towards Berar. In the Mahratta country, the low caste tribes are the humbler village servants, the Ramusi, Bhil, Gond, Mhair, and Mhang, all of whom serve as watchmen. The Ramusi, Kallar, Marawar, Beder, are sturdy, martial, predatory races. Below the ghats, near Bombay, the Dier are known as Parwari, which means outside the hamlet or village, they not being allowed to reside within its walls. As amongst the Dravidian races in the south of India, so the various Aryan or Hindu districts contain numerous small tribes, the supposed remnants of a prior colonization, and mostly supposed to be, like the Tamil, people of Turanian descent. Among these are the Ramusi of the Bombay Presidency.

RAN, also Ranwa. MAHR. Wild; a forest, a wood, a waste. Ran patti, a forest.

RANA, a genus of reptiles of the second subclass Batrachia, of the order of tailless Batrach-

ians or Batrachia salientia. The following species occur in the E. Indies:—

Rana kuhlii, *Schlag.*, Ceylon, Ningpo.
R. hexadactyla, *Lac.*, Ceylon, Madras.
R. cyanophlyctis, *Schneid.*, Ceylon, S. India, Lower Bengal.
R. tigrina, *Daud.*, all India.
R. Liebigii, *Gthr.*, Sikkim, Nepal.
R. esculenta, S. China.
R. sylvatica, *Leconte*, Ningpo.
R. gracilis, *Wieg.*, from Madras to S. China.
—*Gunther.* See Frogs; Reptiles.

RANA, a title of the ruler of Mewar, a Rajput race whose capital is Udaipur, but it is also given to the chief of Porbandar, to the ruler of Dholpur, and to the chief of Jhalawur. A higher grade is maharana. A lady of this rank, or the wife of a rana or raja, is a rani or maharani, and these titles are applied to the Empress of India. Rana Singha, chief of Chitore in 1526, defeated the emperor Baber at Futtchpur Sikri, but shortly after, in 1527, Baber overthrew him and completely broke his power. Ranawat, in Mewar, descendants of Raja Oody Singh. They are also styled Purawat and Kanawat. See Mewar.

RANADITYA was a very powerful prince, whom native writers have accredited with the miraculous reign of 300 years. The period of his reign General Cunningham places between A.D. 480 and 555. The date, therefore, of the two smaller temples of Ranesa and Amriteswara may be assumed as about A.D. 500.—*Cole. Ill. Ancient Buildings of Kashmir.*

RANCHEE, the chief civil station of Lohardugga.

RANDIA, a genus of plants of the natural order Rubiaceæ. *R. dumetorum*, Dekhanensis, fragrans, Gardneri, rigida, speciosa, tetrasperma, nutans, and uliginosa grow in the E. Indies. One species, the Nalla Manga, TEL., is a good-sized armed tree of the Godavery forests, furnishing a very hard and close-grained wood, good for turnery.

Randia dumetorum, Lam., Bush Randia.

<i>Gardenia spinosa</i> , Linn.	<i>Randia longespina</i> , D. C.
<i>Posoqueria dumetorum</i> , Roxb.	<i>Canthium coronatum</i> , Lam.
<i>Ceiscus Malabaricus</i> , Gert.	<i>Gardenia dumetorum</i> , Retz.
Jowz-ul-kueh, . . . ARAB.	Madana, . . . SANSK.
Jowz-ul-kowsul, . . . ARAB.	Wali kukuru-man, SINGH.
Pieralu, . . . BOMBAY.	Maru karang, . . . TAM.
Muen-phal ka-jhar, HIND.	Madu karray, . . . "
Gehela, . . . MAHR.	Mlanda, Manga, . . . TEL.
Mindhal, Mendphal, PANJ.	

A shrub or small tree, thorny and branching, met with in the hotter parts of Ceylon; in Coimbatore and the Bombay forests, the wood is strong, hard, and close-grained. It grows also in Gujerat and northwards in the Dehra Doon and the Kheeree pass. The fruit is used in Malabar to poison or intoxicate fish, which are still considered good for eating.

Randia uliginosa, D. C., Bog Randia.

<i>Gardenia uliginosa</i> , Roxb.	<i>Posoqueria uliginosa</i> , Roxb.
<i>Devata nalle</i> , . . . TEL.	<i>Guahu peddamranga</i> , TEL.
<i>Nalla kakasi</i> , . . . "	

A native of Ceylon and British India, in moist places. The flowers are large, white, and fragrant, and in twos or threes at the top of the branchlets. The berry is about the size of a pullet's egg, ash-coloured or olive-grey, and two-celled. The seeds are flattish, nestling in the pulp. The unripe fruit is employed as a vegetable dye.—*Thw.; Wight; Roxb.; Beddome; Stew.*

RANG. HIND. Colour, dye. SINGH., gold. Hence Rang - welle, golden sand; Rang - galla, golden rock.

RANGACHARYA, a great scholar who translated into Sanskrit the writings of Ramanuja. He was also author of two treatises defending Vaishnava doctrines.—*Growse*, p. 210.

RANGAR, a Rajput race in Malwa and Mewar; also disorderly persons in the N.W. of India, a slothful caste of agriculturists.

RANGAR amongst the Mahrattas is a term applied to all the Brahmans of Central India. Sherring says the Rangar are, to some extent, an agricultural class. Some of them have been employed as sepoya. They are numerous in Shekhawati and the Bhatti territory. Colonies of the caste are found in the Upper Doab and Rohilkhand. They have, as a class, the reputation of being turbulent and disorderly. Some of them have embraced the Muhammadan faith.—*Wilson*; *Sherring's Castes*, p. 329.

RANGARI. HIND. A dialect of the Hindi spoken along the south and west of Malwa and in Mewar. Its limits are the Indus on the west, Bundelkhand on the east, the Satpura Hills on the south, and Jeypore, Jodhpur, and Jeysulmir on the north.—*W.*

RANGAS or Rangi. MALAY. Supposed to be the manchineel of the West Indies, but perhaps only from the noxious quality of its juices; is the Arbor vernicis of Rumphius, and is particularly described in the Batav. Trans. v., under the name of Manga deleteria sylvestris, fructo parvo cordiformi.

RANGBODDE or Rambodde, in lat. 7° 9' N., and long. 81° 49' E., in Ceylon, 10 miles N.W. of Nurelia. The old rest-house is 3187 feet above the sea. The flag-staff at the foot of the Rangbodde pass is 6586 feet.—*F. and S.*

RANGHA - AS. —? A Penang wood of a light-brown colour, used for furniture.—*Col. Frith.*

RANGOON, the chief town of British Burma. It was founded in the second half of the sixth century B.C. by a missionary body of Buddhists. It was rebuilt in 1755 by Alompra, and named by him the Yankon or 'Victory achieved,' in commemoration of his conquests. It is built on the left bank of the Hlaing river, at its junction with the Pegu and Pu-zwon-doung streams, 21 miles from the sea. It gives its name to a British revenue district in the province of Pegu, occupying the seaboard from the mouth of the river Tsit-Toung (Sit Tang) to the To or China Buckue, a branch of the Irawadi between lat. 16° and 17° N., and long 95° and 96° E., the area being 5691 square miles. The population of the town in 1872 was 98,745, and that of the district 332,324.

Burmese, . . .	349,713	Muhammadans, .	10,126
Mon or Talaing, .	12,394	Europeans, Ameri-	
Karen, . . .	27,830	cans,	2,384
Arakanese, . . .	302	Chinese,	3,718
Shan,	6,396	Others,	1,989
Hindus,	16,218		

In 1881 the town population had increased to 134,176, and that of the district to 602,223.

Gaspar Balbi visited Pegu in 1579-80. The English, Dutch, Portuguese, and French had factories at Than-ly-eng or Syriam. Difficulties occurred between the British and the Burmese in

1794, and after Colonel Sym's visit a British resident was appointed to Rangoon.

The Mon are supposed to have been prior occupants of Pegu, whom the Talaing (Telung) from the Peninsula found settled there, and the Talaing language is spoken in British territory. At the 1881 Census it was spoken by 154,553 souls. The principal pagodas in the district are the Shwe-dagon, the Bo-ta-h'toung, and the Taulai, in Rangoon; the Kyaik-houk at Syriam, the Shwe-h'maw-daw at Pegu, and the Tshan-daw at Twan-te. The Shwe-dagon is the most celebrated object of worship in all the Indo-Chinese countries, as enshrining several hairs of Gautama Buddha. The Shwe-h'maw-daw is the great pagoda of the Talaings. They say the Shwe-dagon pagoda was founded by two brothers, who had met and conversed with Gautama Buddha in India. But the first notice of the country that can be considered as historical is given in the Singhalese Mahawanso, which mentions the mission of Sono and Uttaro, sent by the third Buddhist Council (B.C. 244) to Suvarna-bhumi ('Aurea Regio') to spread the Buddhist faith. Karens belong to the Pwo and Sgau families, and are industrious agriculturists. Many have been converted to Christianity. In a commercial point of view, it is the most important town of British Burma. Rise of tide at springs, and for two days afterwards, from 20 to 25 feet, and 13 and 14 feet on the neaps. The sands extend a long way to seaward, over which the bore rushes with the flood, which makes it very dangerous when near them; the same bore runs up the Sitang river 15 leagues east of Rangoon bar. It is very slightly felt in the delta of the Irawadi, and merely rushes over the extensive sand at the entrance of the Rangoon river and on to the Sitang. There is a bore in Bassein creek, which joins the Rangoon and China Buckue branch. Rangoon was twice taken by the British Indian armies, once on the 11th May 1824, and again on the 5th April 1852, and the British soldiers are now cantoned on the S.W. and W. of the Shwe-dagon pagoda.—*Winter's Burma*, p. 6.

RANGO PEAK, in lat. 33° 8' N., and long. 78° 54' E., in Ladakh, N. of Hanle. The top of the peak is 20,786 feet.—*Cunningham*.

RANGPUR, a small town in Bengal with about 14,000 inhabitants. It gives its name to a revenue district between lat. 25° 2' 50" and 26° 18' 45" N., and long. 88° 47' and 89° 35' 30" E., in the Rajshahi and Koch-Behar division. Local traditions allege that the district has been ruled successively by Prithi-raja, the ruins of whose capital are pointed out at Jalpaiguri; the next was a Pal dynasty; and the third had three kings, each of whom had a separate capital, that at Kamatapur being the capital of Niladwaj, the first ruler. In the end of the 15th or beginning of the 16th century, the State was conquered by Husain Shah, the Afghan king of Gaur, under whom most of the people adopted Muhammadanism; and in 1872, 1,291,465 were professing that faith, the total population being 2,149,972. The Koch, Pali, and Rajbansi in Rangpur are the semi-Hinduized aboriginal tribes, numbering 407,658 persons,—the Chandal, 36,148; and the Khyen, 20,013; Teyar (fisherman), 141,213; and Kaibartta, 35,396. There are also 10,623 Brahmans of the Mithila and Kaurupi Vaidak clans; Kayasthas,

10,387, including apparently many Kolita from Assam; and Rajputs, 2404.—*Imp. Gaz.*

RANGRI, in Cuttack, a low servile class.—*W.*

RANGRI BHASHA or Bhaka, a Hindu dialect spoken in the central parts of Hindustan and on the western borders of Rajputana. In the schools of Central India the dialect of the Hindi termed Rangri is the common language taught, which, as well as accounting, is learned by all the children who can afford it. The Rangri Bhaka prevails as far west as the Indus, east as far as the frontier of Bundelkhand, south to the Satpura Hills, and north to Jeypore, Jodhpur, Jajpalspur. There is, in different provinces, a variance in the pronunciation in many of the words, but the language is the same, and is written in the same character. Many books and songs have been composed in this language. The word Rangar, the Rajputs say, is derived from Run, signifying battle, and Ghar, a fort, an epithet asserted to have been given them by one of the kings of Delhi, expressive of their bravery; but the Mahrattas say that the derivation is from Ran, which means a jungle or forest, and Gurtee, a man, or metaphorically a barbarian.—*Malcolm's India*, ii. p. 191.

RANG-TANG. BHOTI. Lowlands.

RAN-HUN. The wild dog, *Canis primævus*, or *Canis rutilans*, a native of the Kashmir ranges, and although not to say common, is by no means rare; it is so stealthy in its habits, that attempts to obtain specimens often prove abortive. They hunt in packs, and attack the largest deer. Even the Kashmir stag is said to be brought to bay and killed by packs of wild dogs. The wild dog seen by Dr. Hooker on the Khassya mountains, and known there by the names kulsam and khas, may be a different species, though Colonel Sykes considers it identical with the kolsum of the Dekhan, C. Dekhanensis.—*Adams*.

RANI, the consort of a Hindu raja or rana, a queen. The Queen-Empress of India is known in India by the Hindu title rani, and by the Muhammadan title malikah. As Queen-Empress, the title should be maharani. Many towns are called after the rani. Raniah was founded by Rai Singh of Bikanir, and named after his rani, to whom it was assigned. It was taken by Imam Mahmud. Several of the rani of India have been famed. The rani of Jhansi was the widow of a Bundela chief called Gungadhar Rao, who died in 1854, having adopted a son. But Lord Dalhousie declared the Jhansi State a lapse, and when the revolt and rebellion of 1857 occurred, she instigated the native regiments there to rise, and the British officers sought refuge in the fort. Unable to hold out, they capitulated on terms, but, with one exception, the sepoy destroyed man, woman, and child. The rani then reassumed sovereign power, dug up cannon, and assembled an army of 14,000 men, but Sir Hugh Rose opened fire against the place on the 25th April 1858. It was stoutly defended, even women aiding, but the town and fort fell on the second and third days; the rani fled to Calpee, Gwalior, and Sipri in succession, and fell in action at Morar on the 17th June 1858. She was energetic and able.

Rani Chanda, one of the inferior wives of Ranjit Singh, chief of the Sikh kingdom, and mother of the maharaja Dhuleep Singh. She was

the sister of Juwahir Singh. She proclaimed Dhuleep Singh sovereign in 1843, and assumed regency. From this she was removed by Lord Hardinge, but she continued to intrigue, and she was removed to Benares, from which, however, she fled to Nepal, where she died.

RANIGANJ, a town which gives its name to a subdivision of the Bardwan district of Bengal, situated between lat. 23° 23' and 23° 52' 45" N., and between long. 86° 50' 30" and 87° 37' E.; area, 671 square miles. It has 678 villages, and a population in 1872 of 245,017 souls. The Raniganj coalfield is the largest and most important of the areas in which coal is worked in India. It extends a few miles east of Raniganj town to several miles west of the Barakhar river, or 39 miles long and 18 broad. A portion of the coal-bearing strata is enclosed between the Damoda and the Ajai, the former river receiving the principal drainage. Raniganj coal, like most Indian coals, is a non-caking bituminous coal. The price of Raniganj coal varies from £1, 2s. 3d. to £1, 5s. 7d. a ton in Calcutta. Ranigunge was so called from the rani of Bardwan, who had the proprietary rights vested in her name.—*Tr. of Hind.* i. p. 170.

RANIGHA, amongst the Mahrattas, a musician.

RANIGHAT, lit. Queen's Pass, or Queen's Rock, or Queen's Park, is an ancient fortress in the Peshawar district of the Panjab. It is a vast hill fortress, situated immediately below the small village of Nogram, about 16 miles north by west of Nogram, and in 1848 General Cunningham suggested that it corresponded in all essential particulars with the description of Aornos, as given by Arrian, Strabo, and Diodorus, excepting in its elevation. In 1854, General James Abbott had suggested the Mahaban Hill as the true identification; and in 1863, Mr. Loewenthal brought forward the claims of Raja Hodi's fort, opposite Attock, a site first suggested by General Court. But General Cunningham has again urged the identification of Ranighat with Aornos. The Queen's Rock is a huge upright block on the north edge of the fort, on which the rani of Raja Vara is said to have seated herself daily. The chief objection to the identification is the difference in height,—Ranighat being only about 1000 feet high, while the Aornos of Arrian was said to be 6674.—*Cunningham's An. Geog. of Ind.* pp. 58–78; *Imp. Gaz.* viii.

RANIKHET, a sanatorium in the Kamaon district, N.W. Provinces of India, in lat. 29° 39' 50" N., and long. 79° 33' E.

RANI-NUR, or the Queen's Palace, is a rock-cave in the Puri district of Orissa. It is one of the most modern of a series of cave-temples with which Khandagiri and the neighbouring hill of Udayagiri are honeycombed. The earliest of these excavations exhibit what are believed to be the oldest memorials of Buddhism, and the oldest human dwellings yet discovered in India. The Rani-nur is the latest and most elaborate of these excavations, to which dates have been variously ascribed from B.C. 200 to A.D. 1000. It consists of two rows of cells, one above the other, shaded by pillared verandahs, with a courtyard cut out of the hillside. Two stalwart figures, in coats of mail down to the knees, stand forth from the wall as guards. One of them wears boots halfway up the knee; the other seems to have on

greaves, the feet being naked, but the legs encased in armour. The upper verandah of the Queen's Palace is adorned with a sculptured biography of its founder.—*Imp. Gaz.*

RANIPET, a town in the North Arcot district of the Madras territory, situated on the north bank of the Palar river, in lat. 12° 56' N., and long. 79° 23' 20" E.; population (1872), 2838. Ranipet was the military cantonment of Arcot, and its pettah on the left bank of the Palar river, from which the cantonment is distant half a mile.

RANIZAI, towards the lower extremity of the Swat valley, a formidable range of hills, bounding the valley for many miles from east to west, nearly parallel to the British frontiers; and at the eastern extremity of this range stands the Mora mountain. Between this range and the frontier, however, intervene two tracts, named Ranizai and Lower Osman Khel, both quasi-dependencies of Swat. The best of the passes leading into Swat is named Mulla-kund, which opens from Ranizai. A little farther to the eastward of Ranizai, also, there are some passes leading into the Lunkhor valley, which belongs to British Yusufzai. These latter passes are not available for passage from Swat to British territory, because, leading into Lunkhor, they can be stopped by any party holding that valley. The passes via Ranizai and Osman Khel, if the people of those tracts accord a passage, lead straight on to the British plains of Hashtnagar. Above the Lunkhor valley, just beyond the British frontier, is the strong village of Pullee. The subdivisions of the Peshawur district adjoining the tribes above described, are Lunkhor or north-west corner of Yusufzai, and then Hashtnagar.

RANJAU. MALAY. Sharp stakes driven as a palisade around houses in Java.

RANJHA or Ranjhan is the name given to Leander by Hindu poets.—*Wilson.*

RANJIT, a river of Bengal, which rises in Independent Sikkim and enters Darjiling district from the west, forming part of the northern boundary. After a short course from west to east, it falls into the Tista, lat. 27° 6' N., and long. 88° 29' E. A little above the junction with the Kalhet, the level of the river is 1839 feet; two miles south of Tassidong, the level of the river is 2030 feet.—*Hooker.*

RANJIT SINGH (1780-1839), originally a petty chief, was appointed governor of Lahore by Shah Zaman, king of the Afghans. Favoured by the dissensions between this prince and his brothers, from 1801 he made himself entirely independent, and to the province confided to his care soon added Kashmir, Peshawur, Kohat, Dehra Ismail Khan, and Multan, which accessions of territory rendered his power equal, if not superior, to that of his former master. He did not extend his conquests to Kashmir, Multan, Peshawur, or even beyond the Jhelum, until he was assured of the pacific intentions of the British. He was the greatest leader of the Sikhs; his rise commenced after the departure of Shah Zaman. He made Lahore his capital. In 1806, he first entered into a vague but friendly alliance with the British. Before the close of his long life, in A.D. 27th June 1839, he had succeeded in moulding into one nation the various conflicting interests and

peoples over whom his conquests extended. He was of small stature. When young he was dexterous in all manly exercises, but in his old age he became weak and inclined to corpulency. He lost an eye when a child by the smallpox, and the most marked characteristic of his mental powers was a broad and massive forehead, which the ordinary portraits do not show. From tracts of country which the Sikhs subdued, but did not occupy, Rakhi, literally protection money, was regularly levied. The Rakhi varied in amount from perhaps a fifth to a half of the rental or Government share of the produce. It corresponded with the Mahratta Chouth or fourth, and both terms meant black-mail, or, in a higher sense, tribute. He organized the Khalsa, or 'the liberated,' into an army under European officers, which for steadiness and religious fervour has had no parallel since the 'Ironsides' of Cromwell. He died 1839.—*Imp. Gaz.*; Ferrier, *Journ.* p. 347; *Cunningham's Sikhs*, p. 113.

RANKROOS, HIND., is a phrase embracing mental or physical infirmity.

RANSI, the Nara Sinha of the Chinese Pilgrim, is in the Eastern Panjab.

RANUNCULUS, a genus of plants belonging to the Ranunculaceæ or crow-foot family. *R. aquatilis*, L., grows at Saharunpur; *R. arvensis*, L., grows in S. Europe and on the mountains of Kamaon; *R. bulbosus* is a plant of Kanawar, Europe, and America; *R. Indicus*, Roxb., of Europe, Siberia, Cochinchina, India, Serampur, Calcutta, etc., has small yellow flowers. It is a very acrid plant; when applied fresh, quickly producing a blister. Dr. Wight asserted that wherever, within the tropics, we meet with herbaceous forms of Ranunculaceæ, we may feel assured of jungle fever. Acridity, causticity, and poison are the general characters of this order, which, however, contains species in which these qualities are so little developed as to be innocuous. The genera of the Ranunculaceæ in India are the clematis, coptis, delphinium, naravelia, nigella, ranunculus, and thalictrum.—*Voigt*; *Wight, Ill.*

RAO, a Hindu title originally meaning a chief or prince, now in general use as a title of honour. It is of similar import to and of equal dignity with raja. It is the title of the Hindu ruler of Cutch; but all Mahratta Brahmans lay claim to and assume it as their birthright, adding to it any other titular designation they may possess. It is written rao, rae, rai, roy, and roya, and has been largely bestowed as a title on civil officers by Hindu, Muhammadan, and British rulers. Many Rajputs also adopt it as their hereditary right.

RAOTI. HIND. A kind of tent.

RAPE, Brassica napus, is the cultivated rape seed or cole seed plant, from the seeds of which is expressed the rape-seed oil, the Samon-ka-tol, HIND., so extensively used for lubricating machinery; and the refuse is the rape-seed cake used for feeding cattle, for which also the green stalks are used.

Rape-seed.

Roefero,	DAN.	Sursi, Surras, GUJ., HIND.
Graine denavette, . .	FR.	Shershape,
Rapsaat,	GER.	SANSK.

The seeds are crushed for oil, and the leaves are used as food for sheep. In India the plant is extensively cultivated, and the seeds and oil are

largely exported to Europe. Rape-seed is being exported from India in increasing quantities.

Cwt.	Ra.	Cwt.	Ra.
1874-5, 827,430	37,23,429	'81-2, 1,935,621	1,03,19,272
1877-8, 3,193,488	1,91,84,378	'82-3, 2,821,420	1,57,06,129
1879-0, 1,380,572	85,37,717		

RAPHANUS, the radish genus of plants of the order Brassicaceæ. *R. caudatus*, *Linn.*, or long-podded radish, *Mugra*, *HIND.*, a curious plant, with enormously elongated seed-pods, which has excited attention in Europe. It is cultivated in Gujerat and the Panjab. The natives have an idea that this is only the *R. sativus* taken up, having all its roots cut close round and then replanted. *R. sativus*, *Linn.*, is the muli of India, and the red variety is the Hung-lo-peh of the Chinese. It is grown in all the south of Asia, and up to 16,000 feet in the Himalaya.—*Stewart*.

RAPHIA, cloth of twisted thread made from the leaves of the *Ruffia* palm (*Raphia ruffia*, *Mt.*) by the Malagasy. Garments in common use in Madagascar are of this cloth.

RAPHISTEMMA PULCHELLUM. *Wall.* A handsome climber of the N.E. Himalaya.—*Gamble*.

RAPHO-CHE or Ra-chhe, and the female Ramo-chhe, of Tibet and Ladakh. *Capra megaceros*, *Hutt.*, *Bly.* The name means the great goat, and is the Mar-khor or snake-eater of the Muhamadans. It is common in Balti, Badakhshan, and Chitral.

RAPTA, now Quiloa, near the oriental marsh of Ptolemy.

RAPTI, a river of Oudh and the North-West Provinces, which rises among the Outer Himalayan ranges of Nepal, in lat. 28° 19' N., and long. 82° 53' E., and flowing round a long spur of mountains, first southerly for 40 miles, and then north-westerly for 45 miles, enters British territory in Bahraich district, Oudh, in lat. 28° 3' N., and long. 81° 55' E.; frequent changes of its bed occur. Numerous lakes in the Basti district communicate with the Rapti, the chief being the Tal Bakhira, Tal Pathra, and Chaur Tal. It then enters Gorakhpur district, flows beside the town of Gorakhpur, and finally joins the Gogra (Ghagra), in lat. 26° 15' N., and long. 83° 42' E., after a total course of 400 miles.

RAPTORES, or birds of prey. In natural history, an order of birds comprising the families Vulturidæ, Polyboridæ, Serpentinidæ, Falconidæ, and Strigidæ. They are numerous in India. The peregrine falcon, the true hobby, the kestrel, the British sparrow-hawk, all the Indian harriers, and the short-eared owl, are true migratory birds. See Birds.

RAQM. PERS. The Persian term for the phonetic expression of the numerical powers of the Arabic letters. A kind of enumeration by the initial letters of the Arabic words for the numbers, used at Muhammadan courts and by the Kayasths. The following is an attempt to reduce the orthography of the Roman equivalents to as close an adherence to the literal definition of the original Kufic as the nature of the English system of writing will allow. In this case, the nine letters of the Arabic alphabet whose powers have been perverted in the utterance of foreigners, have been made to follow the Persian system of phonetic expression, and are severally represented by the following English pointed or accented equivalents:—

	1	2	3	4	5	6
	ا	ب	ت	ث	ج	ح
	..	h	d	a	z	t
The Arabic powers of these letters are severally .	th (thick)	h	th (thin)	a	d	t
The Persian phonetic expression,	Adad.	Salasa.	Arba.	Khamsa.	Sitta.	
	7	8	9			
	ظ	ع	ق			
	z	a, u, etc.	k			
The Arabic powers of these letters are severally .	th (father)	a	k guttural			
The Persian phonetic expression,	Sabá.	Samania.	Tissa.			

—*Thomas Prinsep*.

RAS. ARAB. The head; a head of cattle or horses. In Bengal, it is customary for a person to have two names, one his Ras name when engaged in religious rites, as Tarani Charan; the other his Dak name, as Kesav-Das.—*W.*

RAS. ARAB. A cape, a headland; hence—
Ras-Arah, the S. cape of Arabia, low, sandy, rounded, and dangerous; several vessels have been wrecked on its banks, which extend as far as Khor Amran.

Ras Asir or Assair, or Cape Guardafui of the old charts, the N.E. point of Africa, is a precipitous rocky cape 900 feet in height.

Ras Bab-ul-Mandab, the northern headland on the Arabian shore of the straits of that name.

Ras Jashk, in lat. 25° 50' N., long. 57° 43' 3" E., is a low projecting cape, sandy, on the N. coast of the Persian Gulf.

Ras Mahomed, the extreme point of the peninsula of Mount Sinai, in lat. 27° 43' N., long. 34° 15' 30" E. It is 50 feet high.

Ras Muari or Cape Monze is called Ras Jil by the Baluch. It is the frontier promontory between Sind and Baluchistan, at the S.E. extremity of the estuary of the Hab river, lat. 24° 50' N., long. 66° 43' E. This headland is well known to mariners, and forms the extreme southern offshoot of the hills which, under the name of Brabuik, Hala, etc., separate Sind from Baluchistan. The Hab river washes its eastern base, and on the Baluchi or western side of the Hab estuary rise the Jabal Pabb mountains, with peaks as high as 2500 feet. Cape Monze, with the Jabal Pabb on the Baluchi or western side of the river, form well-known landmarks for making Kurachee during the south-west monsoon.

Ras-Rahmat, called by British navigators Cape of the Wind's Death, is the western headland of that extensive bight on the Arabian coast whose eastern boundary is near the town of Gosiher.

Ras-ul-Khyma, in lat. 25° 48' N., long. 56° 4' E., a narrow sandy spit, known to historians as the scene of an expedition of the British Government of India against the Wahabee sect. It is an Arabic name, signifying the 'cape or head of the tent,' situate on the Arabian coast of the Persian Gulf. The Juasmi, a Wahabee tribe, having captured some of the East India Company's ships, and murdered the greater number of their crews, in 1820 an expedition was sent against them, which

completely effected the object of the expedition, by destroying Ras-ul-Khyma, the Juasmi capital, and above fifty large dows.

Ras Zeiti, Zeitiyah, on the Egyptian side of the Gulf of Suez, 16 miles S.W. by S. of Tur. The *Carnatic*, P. and O. steamship, was lost on a reef near Ras Zeiti.—*Imp. Gaz. viii.*; *Ouseley's Tr. i. p. 3*; *Findlay*.

RAS, a musical term. Rasdhari, a musician, applied to Hindu dancers, etc.

RASA. SANSK. The passions, of which, according to Ward, the Hindus reckon nine, viz. love, risibility, courage, terror, pity, peace, disgust, wonder, and rage. Colonel Tod says the nine nymphs, the Nao-Rasa, are also called Nao-Ragini, from Raga, a mode of song over which each presides, and No-rasa, or nine passions, excited by the powers of harmony; and to this he would trace the origin of Apollo and the muses.—*Ward, iv.*; *Tod, i. p. 540*.

RASA. SANSK. A circular dance in which Krishna joined with the shepherdesses. It is performed at the festival of Krishna by cowherds and worshippers of Krishna. The Ras Yatra is a Hindu festival held in the month Kartika (October—November), in honour of Krishna, when dancing and dramatic representations take place. The movements of those who personate the deity and his fair companions are full of grace, and the dialogue is replete with harmony. The Chobi of Mathura and Vindravana have considerable reputation as vocalists; and the effect of the modulated and deep tones of the adult blending with the clear treble of the juvenile performers, while the time is marked by the cymbal or the soothing monotony of the tabor, accompanied occasionally by the murali or flute, is very pleasing.—*Tod's Rajasthan, i. p. 543*. See Hooly or Hohli.

RASA, also Sutam, also Parada. SANSK. Mercury; also a savour.

RASAD. PERS. Supplies to an army on the march; provisions.

RASALAH, a pamphlet; a troop of horse. Rasaldar, a commander of a troop.

RASA-MALA. MALAY. Liquidamber altingia.

RASA-MANDALA, called Mandala Nritya, is a mystic dance, apparently analogous to the Pyrrhic dance, or the fire dance of the Egyptians, performed on the annual festival sacred to the sun-god Heri. He is represented with a radiant crown in a dancing attitude, playing on the flute to the nymphs encircling him, each holding a musical instrument. The Ras-mandala is typical of the zodiacal phenomena; and in each sign a musical nymph is sculptured in alto-relievo in the vaulted temples dedicated to the god, or in secular edifices by way of ornament, as in the triumphal column of Chitorea. On the festival of the Janam, or 'birth-day,' there is a scenic representation of Kaniya and the Gopis, when are rehearsed, in the mellifluous accents of the Ionic land of Vriji, the songs of Jaya-deva, as addressed by Kaniya to Radha and her companions. A specimen of these was translated by Sir W. Jones.—*Tod's Rajasthan, i. p. 540*.

RASA-PUSPUM. HIND. One of the mercurial preparations of India. Rasayana, in Hindu medicine alteratives. Rasan, transmutation of metals.

RASAU'. HIND. The extract from the wood and 'roots' of the Berberis aristata and other species of berry.

RASA YATRA, an annual festival in various parts of India, held in the month Kartika, upon the sun's entrance into Libra, celebrated by nocturnal dances and representations of the sports of Krishna.

RASHANA or Roxana, mother of the child of Alexander the Great.

RASHID -ud- DIN, also named Fazl Ullah Rashid, author of the Jami-ut-Tawarikh, was born at Hamadan A.D. 1247, A.H. 645. He was son of Imad-ud-Daulah Abu-l-Khair. His enemies, in the latter part of his life, called him a Jew both by birth and religion. Quatremere is inclined to think that he was possibly of Jewish descent, as he shows an acquaintance with Jewish rites and customs singular for a Muhammadan statesman; and Ibn Batuta (ii. 116), who saw Rashid's son attending as wazir on Abu Said Khan at Baghdad, says that the father, Khaja Rashid, had been an emigrant Jew. He had studied agriculture, architecture, and metaphysics. He was acquainted with Hebrew, Arabic, Mongol, Turki, and Persian. His great work, the Jami-ut-Tawarikh, is a collection of histories, or historical cyclopædia. It contains histories of the Tartar and Turkish tribes, of Chengiz and his race, and of the Persian khans in particular, including his master, Ul Jaitu; of various dynasties of Western Asia, of Mahomed and his companions, of the prophets of Israel, the Cæsars, and several Christian princes; of China and of India. It was intended to conclude with a universal geography, but it is doubtful if this was ever written, though the existing portions of the work contain many geographical notices. It is in Persian. In 697 he became Grand Vizir to Ghazan Khan, and held the office under that monarch's brother and successor, Ul Jaitu. Accused of having poisoned the last mentioned, he was put to death by Sultan Abu Sadi in A.H. 718. The Jami-ut-Tawarikh was commenced by order of Ghazan in A.H. 700, and completed in 10 years (A.H. 710), A.D. 1310. It gives a picture of the knowledge regarding India which Muhammadans possessed at the close of the 14th century.—*Elliot's History of India*; *Yule's Cathay, ii. p. 255*.

RASHTRA KUTA, the Rahtor rulers at Malkher, the Balhara dynasty.

RASK, ERASMUS, an eminent oriental scholar, a native of Denmark. In 1826 he published a little treatise on the age and genuineness of the Zend Language and the Zendavesta, etc. He was a Sanskrit scholar, and a general linguistic investigator of rare talents and acquirements; he had travelled in Persia and India, and had brought home to Copenhagen a valuable collection of Avestan manuscripts. Professor Rask of Copenhagen and Dr. Caldwell are of opinion that the Dravidian languages are to be affiliated to the Scythian, Turanian, or Altaic.—*Oriental Linguistic Studies, p. 175*.

RASKHUT. ARAB. A pomade compound of antimony with galls, with which the ladies anoint the hair of their eyebrows and eyelashes.

RASOLNIKI, a fanatic sect in Kazan. A horrible practice reigns among some of the members of this sect,—that of condemning their persons to mutilation; the females also use violent means to obtain the same end. The greatest part of the money-changers in St. Petersburg are said to follow this custom. The severest persecution

has been from time to time employed against them. —*Turnerelli's Kazan*, i. p. 171.

RASORES, Gallinaceous birds or game birds; the Gallinæ of Linnaeus, the Gallinaei of Vieillot, and the Pulveratrices of some authors. The order includes the Pteroclidæ family, also the Phasianidæ, Tetraonidæ, and Tinamidæ. See Birds.

RASPBERRY.

Hindboer, . . .	DAN.	Frambesia, . . .	PORT.
Flamboos, . . .	DUT.	Malina, . . .	RUS.
Framboise, . . .	FR.	Frambuesa, . . .	SR.
Himbeere, . . .	GER.	Hallon, . . .	SW.
Mora di rovo, . . .	IT.	Aghaj-chilegbi, . . .	TURK.

The raspberry of India or country raspberry is the *Rubus lasiocarpus*; the *R. albesens* and *racemosus* of Roxburgh, and the *Mysorensis* of Heyne, grow in most parts of India. See *Rubus*.

RASSAM, **HORMUZD**, born at Mosul, the modern town on the Tigris, opposite to which, and principally beneath the mounds of Kouyunjik and Nabbi Yunus, the ruins of ancient Nineveh have been unearthed. He began his connection with Sir Henry Layard's explorations in Assyria and Babylonia with his own important discovery, in the northern corner of the Kouyunjik mound, of the palace of Assurbanipal, the warlike Sardanapalus of Greek tradition. He secured for the British fine bas-reliefs, exhibiting with great spirit and truth the king's hunting and warlike expeditions, which are now in the British Museum, also the more precious contents of the royal record chamber and library, including Assurbanipal's Annals and the famous Deluge Tablets. In 1876, on the death of Mr. George Smith, Mr. Rassam was chosen to continue that eminent Assyriologist's explorations at Mosul, and he engaged several hundred workmen to dig for inscriptions and other antiquities in the ruins of the palaces of Assurbanipal and Sennacherib, and other discoveries attended his renewed excavations at Nimrud, the Calah of Genesis. He heard of a mound called Balawat, about 15 miles to the east of Mosul and 9 from Nimrud, in which some bronze plates with Assyrian figures and cuneiform inscriptions on them had been found by an Arab while digging a grave there. A sample had even been sent to him in England. Eager to secure the remainder of the monument, and aware that great difficulty would be encountered, he used every effort to obtain the requisite permission. The tablets were inscribed by the great conqueror's royal father, Assurnazirpal, and a translation of them was made by Mr. Ernest A. Budge. The tablets are dated in the reigns of Samas-sum-ukin and Kandalanu, the Chinladanus of the Greeks, who were contemporary with the latter half of the reign of Assurbanipal or Sardanapalus of Assyria, about B.C. 646. The tablets are from Abu-habba, the site of the ancient Sippara, the Sepharvaim of the Old Testament, which is mentioned by Sennacherib in his letter to Hezekiah as a city whose king had been unable to resist the Assyrians. Sippara, or Pantibiblon, as the Greeks called it, is mentioned by Berossus as having furnished five out of the ten Chaldean kings of the time before the flood, and as the place where Xisuthrus, or Noah, buried the records of the antediluvian world at the time of the deluge, and from which his posterity afterwards recovered them. The Hebrew term Sepharvaim,

which is the verbal equivalent of the 'two Sipparas, is applied to twin cities, one of which was situated on each side of the river. The Sippara from which these tablets were procured is the Sippara of Samas, Tsipar sha Shamas, or Sippara of the sun-god, as being the place where pre-eminently the sun was a chief object of worship. The other Sippara, or Sippara of Anunit, which is supposed in ancient times to name the Sepharvaim of Scripture history, is up to the present unknown to modern investigation.

RASSI-KA-MELA is a fair which since some years has been put a stop to through the Commissioner of Kamaon, who represented to the raja of Garhwal the loss of life which frequently took place during the spectacle. A rope is prepared several inches in circumference, and several hundred yards in length, made of Babur grass, which grows on these hills. When finished, it is tested. A few days before the fair takes place, and a locality has been fixed upon, this rope is stretched from the hill-top, or hill-side, to another, across some frightful yawning khud, some hundred yards in width; one end of the rope being fixed much higher than the other. On this rope is placed a large wooden horse, or imitation of one, generally painted red or blue, under which or through the horse's legs, it is so tied as to keep it in an upright horizontal position, so that it may slide from the higher to the lower end of the rope. On the day the fair comes off, thousands of hill folks collect together to witness the tamaasha, music, and dancing, not forgetting hill whisky. As the hour of action approaches, the horseman gets astride of his charger, and, at a given signal, away go horse and rider, acquiring increased impetus as they proceed; the crash at the last is fearful, horse and rider being pitched with great violence to the ground. In former years, hill rajas, their ranis and retinue, used to be present. It was customary then to have a body of matchlockmen in attendance, and as the bold rider and horse slipped down the rope, a volley was fired at them, but seldom hit, but had a casualty occurred, the venturesome rider would have been handsomely paid, and the family pensioned. After the ride is over, all present contribute according to their means, so that a goodly sum is generally collected. A Rassi-ka-Mela took place at Landour, a little above Claremont, a house half-way up the hill, and where some rocks stand at the turning of the road. One end of the rope was fixed in there, and then stretched across above the Butcher khana-khud to the hill opposite, several hundred yards. Away went the rider, obtaining a frightful impetus; with great force horse and rider were pitched against the hill-side. As they reached terra firma, the rider had his thigh and arm broken, in fact barely escaped being killed.—*Himalaya Chronicle*.

RASTOJI, a tribe of Vaisya Hindus in Benares, engaged extensively in trade; extensive bankers, wealthy and industrious.—*Sherring's Hindus*.

RASUL, **ARAB**. A messenger, an ambassador, a prophet. Rasul Allah, the messenger of God, i.e. Mahomed. Of these Rasul messengers, Muhammadans recognise 224,000, or 124,000, amongst them 313 apostles. Six brought new laws,—Adam Sufi Allah, the chosen of God; Nuh (Noah) Nabi Allah, the preacher of God; Ibrahim (Abraham) Khalil Allah, the friend of God; Musa (Moses)

Kalim Allah, one who conversed with God; Isa (Jesus) Ruh Allah, the Spirit of God; Mahomed, Rasul Allah, the messenger of God.

RASUL NUMA (lit. displaying the messenger), a clan of fakirs. Rasulshahi, a clan of fakirs.

RASU - MUNCHU of the Hindus, a sacred edifice, so called, in which the image of Krishna is annually placed and worshipped. — *Ward's Hindoos*, ii. p. 3.

RAS YATRA, a Hindu festival, the annual commemoration of the dance of Krishna with the sixteen Gopi. Vast crowds, clad in their best attire, collect in some open place in the vicinity of the towns, and celebrate the event with music, singing, and dramatic representations of Krishna's sports. All the public singers and dancers lend their services on this occasion, and trust for a remuneration to the gratuities of the spectators. At Benares and Bindraban, this festival is held with much display.

RAT, amongst naturalists, the genus *Mus*. The coffee-rat is an insular variety of the *Mus hirsutus* of W. Elliot, found in Southern India. They inhabit the forests, making their nests among the roots of the trees, and feeding, in the season, on the ripe seeds of the nilloo. They do much mischief by gnawing off the young branches of the coffee plant, apparently to get at the tender pith; it is called Dadda-wedda by the Singhalese, is as large as a weasel, and of a greyish-black colour. Monkeys, squirrels, and the rat commit great depredations in fruit time; they are partial to the sweet pulp, which they digest, but evacuate the beans whole. The *Mus rufescens*, Gray, syn. of *Mus flavescens*, Elliot, and *Mus nemoralis*, Blyth, are tree rats, which make their nests on the branches of trees in the forest, and by turns visit the fields and dwellings of the natives, frequenting the ceilings in preference to the lower parts of houses. In Ceylon it is incessantly followed by the rat-snake, *Coryphodon Blumenbachii*, Merr., whose domestication is encouraged by the servants, in consideration of its services in destroying vermin. One day a snake had just seized on a rat of this description, and both were covered by a glass. The serpent appeared stunned by its own capture, and allowed the rat to escape from its jaws, which covered at one side of the glass in the most pitiable state of trembling terror. On setting them at liberty, the rat bounded towards the nearest fence; but quick as lightning it was followed by its pursuer, which seized it before it could gain the hedge, through which the snake glided with its victim in its jaws. In parts of the central province of Ceylon, at Ooreah and Bintenne, the house rat is eaten as a common article of food. The Singhalese believe that it and the mouse are liable to hydrophobia. The *Golunda meltda*, Gray, the soft-furred field rat, makes its dwellings in cultivated fields, in pairs or small societies; and great numbers perish annually when the rains fall. If the monsoon be deficient, this rat becomes a perfect plague. This occurred in 1826 in the Peninsula. After the famine of 1877-78, the Bombay Government gave one rupee for every hundred tails, and upwards of 11,000,000 were destroyed. In 1875-76, rats infested the watersheds of the Salwin and Sitang, and, were journeying steadily southwards. In the spring of 1878, rats, mice, and other vermin made their appearance throughout

parts of Bohemia in such vast numbers as to cause serious loss and damage. Rats are eaten by the Chinese.—*Tennent's Sketches of the Natural History of Ceylon*, p. 423. See Mammalia; Mus.

RAT. HIND. Night. Rat-din, day and night continuously. Rat Jaga, nocturnal vigils; a Muhammadan ceremonial on several occasions, particularly on the Lailat-ul-Kadar.—*Herkl.*

RATA. GHORKA. *Xanthochymus pictorius*.

RATAN or Rattan; Cane.

Beta,	BENG.	<i>Calamus rotang</i> , . . .	IAT.
Bet, Bed,	HIND.	Rotan,	MALAY.
Panjalin,	JAV.	Pirambu,	TAM.
Kowe Sunda, JAV., SUNDA.		Bettam,	TEL.

The rattan canes of commerce are obtained from *Calamus rotang*, Linn., *C. rudentum*, Low., *C. Royleanus*, Griff., and *C. fasciculatus*, Roxb. The Malay term Rotan is an abbreviation of Raotan, from the verb Raot, to pare or trim, that is, the object pared or trimmed. The plants which yield rattans are a genus of palms, which consists of many species, from the girth of a goose-quill to that of a stout walking-stick. They are abundant in all the forests of the Malay and Philippine Archipelagos, and are everywhere extensively used as cordage or ligatures, or in the manufacture of mats and basket-work. These singular plants creep along the ground or climb trees, according to the species, to the length of from 100 to 1200 feet. The principal places of production for the general market are Sumatra, Borneo, and the Peninsula of India. A valuable species is brought from Banjarmassin, on the southern coast of Borneo; in the market they are worth about 150 per cent. more than any others. A vast quantity of rattans are exported from the Malay Archipelago to Europe, Hindustan, and China, four or five millions of them being in some years shipped from the territories under the Government of British India. Amongst the plants producing them may be named the genus *Calamosagus* *harinaefolius* (*Wallichiaefolius*), termed Rotang Simote; *C. ochriger*, Rotang Donam; with *C. scapiger* and *C. laciniosus*. The *Calamosagi* are all climbing plants. The rattan cane is used extensively in Burma and the Tenasserim Provinces instead of cordage. The stays of the masts in the native boats are usually made of rattans, and they are split up into strings for innumerable purposes, to which cord and twine are elsewhere applied. The Karen have different names for seventeen species or varieties. Rattans are manufactured into chairs, baskets, etc.; they also furnish material for the cables of Shakespearian bridges. One species, called country rattan, *Pedda pirambo*, TAM., Moti bet, HIND., *Pedda bettam*, TEL., grows to a great length in most districts of the Peninsula. When green, it is formed into cables for drawing the cars of the Hindu idols, and in some parts for suspension bridges. It answers better than bamboo for baskets and for strong fences, when interwoven between stakes. The rattan when burnt yields an ordinary black for paint. In Liverpool the selling price is from 1s. 6d. to 3s. per 100. The rattans of Borneo are exported to Singapore and Batavia in immense quantities from the Coti and Banjar rivers; on the south and eastern parts of the island they are collected and brought down these streams on rafts by the Dyaks; they are principally re-exported from Batavia and Singapore to India and China. The exports of

rattans from India are principally from Calcutta and Bombay to the Mauritius, Cape of Good Hope, and New South Wales, to the value of £3000 to £4000 annually.—*Seeman; Rohde, MSS.; Crawford's Dict.* p. 365; *Williams' Middle Kingdom*, ii. p. 402; *Low's Sarawak*, p. 42; *Mason's Tenasserim*.

RATAN KHAUR. HIND.? A tree of Chutia Nagpur, furnishing a hard, white timber.—*Cal. Cat. Ex.*, 1862.

RATANPUR, a town of the Central Provinces of India, in the district of Bilaspur, 12 miles N. of Bilaspur town. It was here that the ancient rajas held their court, and it was from this point that the early Hindu settlers, gradually acquiring strength, displaced the aborigines, reclaimed the wilderness, and spread over the plain their civilisation and faith. The township covers an area of 15 square miles, and contains within its limits a perfect forest of mango trees, amid the luxuriant shade of which are scattered an almost countless number of tanks and Hindu temples. The most prominent of these is near the old fort, where a large building, gracefully adorned on all sides with arches and minarets, proclaims that here, about the middle of the 17th century, twenty rani of raja Lachhman Sahi became voluntary satis (suttees).

Ratanpur is in lat. 22° 16' 30" N., and long. 82° 11' E., in a hollow surrounded by the Kenda offshoots of the Vindhyan range. It was the capital of the Haihai Bansi kings of Ch'hattisgarh. Since the death of Raja Bimbaji Bhonsla, in 1787, the town has decayed.—*Cent. Prov. Gaz.; Imp. Gaz.* viii.

RATANS, GROUND. The excellent walking-sticks known to the English under this name, are made from the Rhapsis flabelliformis, which grows in Lin-kin and Southern China. Much of the fibre used by the Chinese is made from the bark of the Rhapsis flabelliformis palm, called tsung, which is stripped off in large sheets from the trunk of the tree. When steeped in water the fibres separate in short wiry threads, of a dark-brown colour, having all the properties of the cocoanut coir. It is the material from which the cordage in Chinese vessels, and sometimes the cables, is manufactured; brooms, rain-cloaks, sandals, hats, brushes for block printing, twine, and other articles are also made from it. The rhaps grows all over Southern China, attaining at times the height of 30 feet and upwards; the bark is stripped off every year. The price for the prepared coir is about four sp. dls. per pikul. Another kind of coir is also in extensive use in the Archipelago for rigging; it is called gomuti or eju, and the thread sells at sp. dls. 1'50 or sp. dls. 2 per pikul. It is the Arenga saccharifera. The best comes from Amboyna.—*Seeman; Morrison*.

RATH or Ratha. HIND. A car, an idol car, a four-wheeled carriage drawn by bullocks, from which, no doubt, has been derived the word chariot; the rath is sometimes ornamented, its scarlet screens and canopy hung with fringes. Rath is a term by which the Mahavellipuram temples are designated. Ratha or Padha Jatra is the procession of Jaganath in his car, a festival in much repute among the Hindus of Bengal and Orissa. Rathapa-yootapa-yootapa, SANSK., from Ratha, a chariot, and Yootapa, a chief; repeated

it signifies chief of chiefs.—*Tr. of Hind.* ii. p. 39.

RATHI SAPTAMI, from Ratha, a car, and Saptami, the 7th day of the month, is dedicated by Hindus to the worship of the sun. This is held about the 11th February, and is regarded as the beginning of the Manwantaram or period embracing the age of Menu. The Holi or Hutasavi festival, in Sanskrit Holikha or Phal gotsava, is called also Dola or Dolavatra, the swinging festival, and supposed to relate to the vernal equinox, and to be similar to the Persian New-year. It is held about the 19th March, or 15 days before the full moon of Phalgun. It is in honour of Krishna, and is quite a saturnalia; red powders are thrown and red fluids squirted at passers-by, and licentious songs sung. At the close of the festival, a pile is lighted, and a wheaten cake, or poli, offered on it.

RATI, the foot roller for cleaning Dharwar cotton. The iron is worked with two feet on a stone by a woman sitting, or rather balancing herself, on a low stool. The seeds are rolled out in front, and the cotton drawn away as fast as it is freed from the seed, and piled up behind under the stool.

RATI, the wife of Kama-deva, the Indian Cupid. Rati is the Hindu goddess of sexual enjoyment. She has several names, Mayavati, etc. etc., and is the analogue of Venus.

RATI, HIND., written Ruttee, the seed of Abrus precatorius; used as a weight. The seed averages 1'312 grains, but the artificial weight has been found to average nearly 2½ grains, being one-eighth of a masha rated at 17'708 grains. As the masha in use, however, averages about 15½ grains, a rati will weigh 1'938 grains, or, according to Colonel Jervis, 1'953 grains.

RATL. ARAB. One pound troy, equal to 5760 grains, but varying from 12 to 16 oz. An Arab weight in Bangalore; 24 ratl make one maund of 25 pounds; in Travancore 25 ratl or rautel=the maund of 18 lbs. 12 oz. 13 gra.—*Simmonds' Dict.*

RATILAM, chief town of a Native State of the same name in Malwa, in Central India, in lat. 23° 21' N., long. 75° 7' E.; 1577 feet above sea-level. It is one of the principal seats of the opium trade in Malwa. The area of the state is 1200 square miles, and population about 100,000. The reigning prince is descended from a younger branch of the Jodhpur family, and ranks as the first Rajput chief in Western Malwa. He has a personal salute of 13 guns. His military establishment consists of 5 field guns, 58 artillerymen, 35 cavalry, and 300 infantry.—*Imp. Gaz.* viii.

RATNA. SANSK. A gem. In Hindu mythology, Chatur-desa-ratna are the fourteen articles, called gems, produced by the churning of the ocean. This event is fabled to have occurred in the second incarnation or avatar of Vishnu in the form of a tortoise or Khurma, when the ocean was churned by means of the mountain Mandara, the serpent Sesha being employed to whirl the mountain round. Ratna champaca is a topaz.

RATNAGIRI, a British district in the Konkan division of the Bombay Presidency, lying between lat. 15° 43' and 18° 5' N., and between long. 73° 3' 30" and 74° 2' E. Area, 3789 square miles; population (1872), 1,019,136. Ten miles or so inland the country becomes more open, but advancing a little farther, it is occupied by spurs

of the Syhadri Hills. The coast inhabitants are largely sailors and fishermen, and the sardine and sharks are largely caught at certain seasons. They are of the Bhandari, Koli, and Gabit castes, some professing Hinduism and some Islam, and the Kunbi and Mhar are cultivators. Bankot has a large number of Konkani Musalmans, who have estates on the Sanchi river. They claim to be descendants of Arab settlers at Dabul, Chaul, and other towns in the Konkan. The features of many have a distinctly Arab caste. Many native Christians are to be found at Harnay, Malwan, Vingorla, and other coast towns. The Southern Konkan has always been the great recruiting ground of the Bombay army.—*Imp. Gaz.* viii.

RATNA-KARA, or house of gems, a Hindu poetical term for the ocean, which in Hindu fable was churned by the Devata and Asura, and produced fourteen gems.

RATNAKARA, author of the *Vivada Taudava*, a law book of the Benares school.

RATNA MALA, by Krishnaji, a Brahman. It was translated by Mr. Alexander Kinloch Forbes, of the Bombay Civil Service. The name means the necklace of gems, and each of the cantos are numbered the first to the eighth gems. It is a chronicle of Siddhraj Jaysinh. It is said to have consisted originally of 108 gems or cantos, of which eight only now remain. Nothing is known of the author Krishnaji. The language is the Bhasha, a dialect of the Prakrit, and his work is founded on the labours of preceding authors.

RATNAPURA, or the gem city, now called Ava or Ayn-wa, a town in Burma, in lat. 21° 50' N., and long. 59° 95' E. It is stated to have been founded in A.D. 1364, by Thaido-men bya, prince of Tagoung, who mastered the kingdoms of Panya and Sagain, into which the country was then divided. The first mention made of Ava by any European traveller, is that by Nicolo di Conti, who was there about 1440 (Ramusio, i. 340). It continued to be usually the royal residence, with some intervals, till the end of the 18th century. In 1526, the Shan races of Monyin and Mogoung took the city and overran the country, of which they held possession till 1554. In that year, the Tounghoo king of Pegu, Tshen-byoo-mya-yen (lord of many white elephants), conquered Ava, and destroyed the city. The king, Nyoun-men-ta-ra, who re-established the city and kingdom after the fall of Pegu in 1601, appears to have been a natural son of the conqueror. Ava was taken by the Peguers during their resumption of independence in 1752. They were speedily expelled by Alompra, but he always resided at Mout-sho-bo. In 1763, on the accession of Tshen-byoo-yen, Ava again became the seat of royalty. It was, however, abandoned on the founding of Amarapura in 1783, and reoccupied in 1823 by the king and queen, who entered in great state, accompanied by the white elephant, and by all the dignitaries of the court, only to be again deserted in 1837 by Tharawadi, who had vowed to make it a heap of ruins.—*Yule's Embassy*, p. 184. See Buddha; India.

RATNAPURA, in lat. 6° 42' N., and long. 80° 17' E., a town in Ceylon, 56 miles S.E. of Colombo. Mean height of the village above the sea is 77 feet. Gillemalle village is 112 feet. The great bulk of the gems of Ceylon come from Ratnapura, which means the city of gems. See Precious Stones.

RATNAVALLI, or the necklace, a drama ascribed to Sri Harsha Deva, a king of Kashmir, written between A.D. 1113 and 1125. The subject of the play is the loves of Udayana or Vatsa, prince of Kausambha, and Vasava-datta, princess of Ujjaini. It was translated by Professor H. H. Wilson.—*D.*

RAT-SNAKE of Ceylon, *Coryphodon Blumenbachii*, is almost domesticated, and is often kept in households.—*Tennent's Sk.* p. 42.

RATTANAS, a species of coarse sacking, made of a long stout fibre in Madagascar, about five feet square, and largely used in the island of Mauritius to dry sugar on.—*Simmonds' Dict.*

RAUCHYA, in Hindu mythology, one of the 14 patriarchs who are supposed to preside successively over the 14 Manwantara of the calpa.—*Warren.*

RAUGHAN. HIND., PERS. Ghi, butter, grease, fat, oil, balsam, resin.

Raughan-i-badam, almond oil.

Raughan-i-baiz-i-murgh, oil of egg-shell.

Raughan-i-balsam, medicinal balsam, Balsamodendron Berryanum.

Raughan-i-bhirbuti, a medicinal blistering oil.

Raughan-i-gul, rose-scented oil.

Raughan-i-majmua, scented oil, compound scents.

Raughan-i-mom, wax oil, medicinal.

Raughan-i-motya and chambeli, jasmine oil.

Raughan-i-pin, Delhra Ghazi Khan, a medicinal oil, made of pelican's fat.

Raughan safed, ghi or clarified butter.

Raughan siya, coarse oil.

Raughal-i-turb, Balsamodendron Roxburghianum, gugal resin.

Raughan-i-bhirbuti, oil of the red velvet insect, bhirbuti, which appears in the rains; the oil is used only as an irritant and blistering agent.

Raughan-i-pin, pelican oil, is made from its fat; one bird yields a quarter of a seer. The Persian name of the bird is Fitan.

Raughan-i-baiz-i-murgh, oil from the shells of hens' eggs, obtained by dry distillation; used in native medicine.

Raughan-guna, a varnish used in gilding leather.

Scorpions' oil, made by steeping scorpions in oil; is used as a cure for scorpions' bites.—*Powell.*

RAUL, amongst the Mahrattas a low tribe who weave a coarse cloth and tape.—*Wilson.*

RAUTIA, a tribe numbering about 15,000 in Chutia Nagpur. They were at an early period introduced by the Nagbansi raja to aid him against his irrepressible Kol subjects, and they obtained grants of land as military colonists, which their descendants still hold. They resemble Gonds in feature and in disposition, but claim Aryan descent; and as they have lost all trace of their original language, and follow the customs of Hindu Sudras, it is impossible to be certain of their affinities.—*Dalton's Ethnology.*

RAUZAT US SAFA, by Mir Khond, who wrote in the 9th century of the Hijira, a vast compilation, consisting of seven books on the general history of the world, from the Creation to the author's time.

RAVANA, a king of Lanka or Ceylon, who ruled over a powerful and civilised state, comprising Ceylon and the whole of the southern division of India. He was the son of Viavarava Muni by his wife Nikaksha or Naikasi, the daughter of Sumali, who, observing the splendour of Kuvera, a son of the sage by his wife Irvira, directed his daughter

to propitiate the sage, that she also might have children by him. Having succeeded in obtaining the good graces of Visrava, Naikasi had by him Ravana, Kumbhakarna, and a daughter, Surpanakha. Another wife of Visravara Muni was Brabira, daughter of Trinavindhu, a king of the Solar line of Vesaia, descended from Srad'ha Deva. Ravana is described as like a demon and cruel. He carried off Sita, wife of Rama, also known as Rama Chandra and Dasrat'h Rama, and brought on an invasion of his island by Rama, in which Rama was assisted by the uncivilised races of the Dandacaranya or forests of the southern part of the Peninsula of India. Ravana and his brother were slain, and Sita was recovered. The story of the Ramayana recounts this war. A festival is celebrated in honour of Ravana by the Shanar race. In Hindu legend Ravana is described with numerous heads and arms, and is said to have become so potent, in consequence of an ill-judged promise (according to some of Siva, and according to others of Brahma), obtained by marvellous religious austerities and devotion, as to have brought all the gods under his subjection. As the promise of the deity could not be revoked, Vishnu found the means of evading the performances of it by becoming incarnate as Rama Chandra to effect this. Ravana is also called Dasagriva, the ten-necked; and Pulastya, and also Visravana as son of Visrava, the father also of Kuvera. His numerous heads and his twenty hands are the usual symbols of dominion.—*Moor*, p. 334; *Hero and Nymph*, p. 288.

RAVANA SURUNI MISALU. *TEL.* Spinifex squarrosa, *Spreng.* This curious diæcious grass, called the sea-pink, is found in great abundance along the Coromandel coast. When the seed is ripe, the spherical head of the plant is detached and blown about the sands by the wind, illustrating in a remarkable manner 'the rolling thing before the whirlwind' of Isaiah xvii. 13, and 'the wheel and stubble before the wind' of Psalm lxxxiii. 13.

RAVATA, in Hindu legend a mountain greater than Meru.

RAVEN, the *Corvus corax*, has the circuit of northern regions; rare in N. Africa, Panjab, Kashmir, Afghanistan; the Tibetan raven is considered as a peculiar species by Mr. Hodgson, an opinion to which the Prince of Canino seems to incline. It may be presumed to inhabit the lofty mountains of Bhutan to the north. The raven of Ladakh is a larger bird than that of the Northern Panjab, owing most likely to the climate being better adapted to its habits and constitution. Dr. Adams scarcely thinks there are sufficient grounds to consider this species distinct from *C. corax*, the differences in what Mr. Hodgson calls this variety *C. tibetanus* being only in a somewhat larger size, the wing measuring 18½ inches, tail 11½, and the bill to gape 3 inches. The raven of Tibet has been called *C. tibetanus* by Mr. Hodgson (*An. and Mag. Nat. Hist.* iii. p. 203) for the reason that it is somewhat larger than *C. corax*.—*Blyth*; *Adams*.

RAVENALA SPECIOSA or *Urania speciosa*, the traveller's palm of Madagascar, has been introduced into India.—*Tenent*.

RAVENSARA NUTS, the produce of *Agathophyllum aromaticum*, found in Madagascar, where they are used as a spice, and occasionally exported. The article imported into China from India under this denomination, is a nut of a dark-

brown colour, the size of a nutmeg, in smell and taste resembling both cloves and pimento; internally it is divided into cells, and contains a kernel extremely hot and biting to the taste, with a strong spicy smell. Ravensara is also, however, the name given to the bark of the clove-cinnamon tree, growing in the Brazil and Madagascar, of which the foregoing is probably the fruit.—*Comp. Descr.*; *Simmonds' Dict.*

RAVERTY, MAJOR H. G. of the 3d Regiment Bombay Native Infantry, author of a Grammar, Text-Book, and Dictionary of the Pukhto or Pushtu or Afghan Language, London 1860; also Thesaurus of English and Hindustani Technical Terms.

RAVI. ARAB. A reciter of poems, stories, etc. Hammad Ravi lived in the time of the Khalif Walid; his memory was great. He was a debauchee; khalifs Walid and Hisham each gave him 100,000 dirhem, and Mehdi 20,000; he improvisatized and greatly altered ancient poetry.

RAVI. Its name in Sanskrit is Airavati, in the local dialect Iraoti (the Irawadi of the Ayin Akbari), which doubtless suggested the names of Hydrotas in Arrian, and Hyarotis in Strabo. Ptolemy calls this river Adris, it is called Rawa in Bara Banghal, and is one of the five great streams from which the Panjab derives its name. It rises in Kulu, on the declivity of a mountain called Banghal, and a short distance west of the Ritanka pass, about lat. 32° 30' N., and long. 76° E.; is formed of several impetuous streams, issuing from beneath large glaciers, at an elevation of 14,000 feet. About 40 miles below its source it is joined by two large feeders, the Budhil and the Nai or Duna. It leaves the hills at Shahpur. At Madhupur the head-works of the Bari Doab canal draw off a large portion of its waters. Thenceforward the river, like other Panjab streams, flows in the centre of an alluvial valley, and has been altering its course past Chumli and Bisauli. In 1870 it carried away the Tali Sahib shrine near Dera Nanak, a place of great sanctity with the Sikhs, and still threatens the town. The Ravi next passes between Sialkot and Amritsar districts. The depth is here not more than a foot in March and April, swelling in June and September to 18 or 20 feet. Entering the district of Lahore, it runs within one mile of Lahore city. Finally, it falls into the Chenab (Chinab), lat. 30° 31' N., and long. 71° 51' 20" E., after a total length of about 450 miles following its windings. It receives as affluents the Nai, 20; Sana, 36; Chakki, 50 miles. About 22,000 square miles are drained. It has a tortuous course, and is fordable in most places for eight months of the year.—*Imp. Gaz.*

RAWAJA, the head-man of a Chittagong Mugh village.

RAWAL, the titular appellation of the chief priest of the temple of Badarinath in the Himalaya. He is always a Namburi Brahman from Malabar. Rawal is also a title of some Rajput princes, as the Rawal of Bhowanagar; and the Rawal title, once that of the Mewar house, is yet borne as a princely title by the Aharya prince of Dongurpur, and the Yadu prince of Jeysummir, whose ancestors long ruled in the heart of Scythia. Rawal seems to have been titular to the Scandinavian chiefs of Scythic origin. The invader of Normandy was Raoul, corrupted to Rollon or Rollo.—*Tod's Rajasthan*, i. 213, ii. 237.

RAWAL of the Wagri, *Circaetus gallicus*.

RAWALA, in Marwar, the palace of the queen. Tod says (i. p. 464) the Rawala of a Hindu prince is a world within itself, and resembles the Muhammadan haram. It is the labyrinth containing the strings that move the puppets which alarm mankind. Here intrigue sits enthroned, and hence its influence radiates to the world, always at a loss to trace effects to their causes.

RAWALIYA, in Gujerat, thread and tape makers.

RAWAL PINDI, lat. 33° 36' 5" N., and long. 72° 59' 8" E., in the Panjab, a large military station. Mean height of the cantonment, 1737 feet. It gives its name to a revenue district lying between lat. 33° and 34° N., and long. 71° 46' and 73° 41' E., with an area of 6218 square miles, and in 1868 a population of 711,256 souls. Its surface is everywhere cut up by mountain ranges; that on the east is known as the Murree Hills, on which a sanatorium has been formed, and one of the Lawrence Institutions established. It is clothed with forest trees, and in some places elevated 8000 feet. Its chief river is the Indus, and its tributaries the Sohan and Haroh. The district contains many of the towns connected with the events of Alexander's expedition, and its earliest inhabitants appear to have been the Takka, a Turanian race, who held the greater part of the Sind Sagar Doab, and gave their name to the town of Takshasila, the Taxila of the ancient Greeks. Its ruins have been identified in the site of Dehrā Shahan or Shah Deri, which lie to the north of the Margala pass. Since then the district became subject to the king of Magadha, and Prince Asoka was employed to suppress a rebellion of the Takka. In the 11th century, the Ghakkar, a non-Aryan race, were dominant, and in the 12th century (A.D. 1193) 30,000 of them were in the Confederate Rajput forces under Pritwi Raja. In 1205, on the reverses of Shahab-ud-Din Ghori in Kharizm, the Ghakkar revolted, but were defeated, and compelled to adopt Muhammadanism, though on retiring he was surprised by a Ghakkar detachment, which swam the river, and killed him at night in his tent (A.D. 14th March 1206). They unsuccessfully revolted again in Baber's time, and again in the time of the Sikhs, and in 1849 the district fell to the British on the conquest of the Panjab. In 1843 and 1844 the country was devastated by locusts (Cal. Rev. 1871). Its revenue subdivisions are Rawal Pindi, Jhelum, Shahpur, and Gujerat. The town of Rawal Pindi is situated between the Indus and the Jhelum; population about 20,000. It is 1453 miles from Calcutta. Rawal Pindi produces gold from the washings at Attock, sandstone, limestone.—*Ilob.; Schl.*

RAWANAH. HIND. An invoice, a custom-house permit or pass for a certain quantity of opium, spirits, etc.

RAWAT, also Raji, a small savage tribe in Gorakhpur, the Rohilkhand Terai, and also a wandering uncivilised tribe in Kamaon. 20 or 30 families are occupants of the forest of Kamaon, who claim to be descended from a prince of Kamaon, who was driven from his throne. Their language is dissimilar to the Hindi of Kamaon. The Rawat are considered to represent the aborigines of the district. The Rawat of Kamaon, under pretence of royal descent, abstain from

offering to any individual, whatever his rank, the usual eastern salutation. The Raji and Kumaya languages are unintelligible to all but the respective races using them.—*Latham; Mr. Campbell, 47.*

RAWAT, a race of Northern India, are occupied as scavengers.

RAWAUN. Bassahir is a tributary state, giving Rs. 3945 as tribute. Rawaun, on the left bank of the Fabur, was transferred to Keonthul. The Thakurai of Kotegurh and Kumharsein were declared independent of Bassahir.

RAWLINSON, SIR HENRY CRESWICKE, K.C.B., an officer of the Bombay army, born 1810, who served there from 1826 to 1833, when he was appointed, with several other officers of his own standing, to the army of the king of Persia, in which he served until 1839. He was appointed Political Agent at Kandahar in 1840, and held that position through the first Afghan war,—a proof of his wise and just rule. In 1843 he was Political Agent in Turkish Arabia, where he subsequently became Consul-General and Ambassador to Persia. For his contributions to antiquarian and scientific research he was made a Fellow of the Royal Society, Honorary D.C.L. of Oxford, Chevalier of the Order of Merit in Prussia, Corresponding Member of the Institute of France, Honorary Member of the Academy of Munich, Member of the Geographical and Asiatic Societies of Germany, of numerous other literary and scientific associations, Knight of the First Class of the Persian Order of the Lion and Sun for his services in that country. His services in Afghanistan were recognised by the bestowal of the Knighthood of the Durani Empire, and he was made a Military Companion of the Bath for his services in Kandahar. He assisted Sir J. Gardner Wilkinson in a new translation of Herodotus, by his brother, the Rev. George Rawlinson, and is author of the Comparative Geography of Afghanistan. He wrote a series of papers on Assyrian Antiquities and the cuneiform character from 1850 to 1852; on the arrow-headed character found in the ruins of Persepolis, and on bricks and stones in the ruins of Babylon and Nineveh; and the celebrated inscription near Hamadan on the Behistun was deciphered by him, and another by Professor Grotefend. His deciphering of the cuneiform inscriptions of Assyria and Babylonia in 1858 placed him in the first rank of scientific discoverers, and the eminent success of his rule at Kandahar won for him the gratitude of the people and honours from his sovereign. Between 1851 and 1861 his writings appeared on the Cuneiform Inscriptions of Western Asia; 1846, on those at Behistun; 1857, on Tiglath Pileser I., king of Assyria; on the History of Assyria and Babylonia. In 1851 and 1861 he edited new editions of Herodotus; and in 1875 he gave his views on the relations of England and Russia; Journey from Tabreez to Ghilan; Journey from Zohab to Kirmanshah; On the Ancient Geography of Mahamra; On the Persian Expedition to Khuzistan.—*Ferrier's Afghans*, p. 371; *Geo. Trans.* 1842, xii. 2, p. 112; *Royal Geo. Journal*; *Jour. Ro. As. Society of London*; *British Museum Records*.

RAY, a genus of cartilaginous fishes in which, although the skeleton is not osseous, the development of organs is so advanced that they would appear to be the highest of the class. Raja

Narinari, *Bl.*, the *Aetobates narinari*, *Mull.*, a fish of the Indian seas. It has a produced snout, pointed and winged-like pectoral fins, and an exceedingly long tail, armed with a strong, serrated spine, which is always broken off by the fishermen immediately on capture, under the impression that wounds inflicted by it are poisonous. Like most deep sea fishes, the ray has a wide geographical range, and occurs not only in all the Indian Ocean, but also in the tropical tracts of the Atlantic.—*Tennent's Ceylon*, p. 328.

RAYA, in the dialect of the south of India, a prince, a captain; a usual name amongst the Telinga race, as Jesul Raya Pillay. The plural, Rayadu, is a title taken by the Velma of the Northern Circars, who claim to be Rajputs.

RAYAKOTTA, in lat. 12° 31' N., and long. 78° 3' E., in the Carnatic, 12 miles south of Saugherri. It is 2449 feet above the sea.—*Scott*.

RAYANA. This tree (*qu. Ficus religiosa*) in Western India is sacred, and is dedicated by the Jains to their first Tirthankara named Reshabh-anath, the patron saint of Satrunjaya. His shrines have all a rayana tree overshadowing his charana or footprints.

RAYAT LAUT, a seafaring race of the Indian Archipelago, adventurous navigators. The Rayat Laut, subjects of the sea, or Orang Akkye, are unquestionably from the same stock as the Jakun. The two tribes are expert divers and fishermen, and frequently make long voyages in their fragile vessels. Otherwise they reside along with their families in their boats for months together, employed in fishing, collecting agar-agar, trepang, etc. The Rayat Laut have but faint ideas of the existence of a benignant supreme Being, and of a state of future existence. In appearance, they resemble the Jakun and Malay, allowing for the physical alteration always induced by difference of food, daily occupations, and habits, especially when continued through many generations. They are darker than the Malay, more savage and uncouth in aspect.—*Newbold's British Settlements*.

RAYAVATA, one of the 14 Hindu patriarchs who are supposed to preside over the 14 Manwantara of the kalpa, and whose anniversaries are noticed in the calendar.

RAYMOND, a French officer in the service of Nizam Ali, nizam of the Dekhan. In March 1795, with 18,000 men, he met the Mahrattas at Kurda with 130,000 horse and foot and 150 pieces of cannon, and was completely defeated. His tomb, to the east of the city, is a shrine to which annually great numbers resort, offering chaplets of flowers. The people first visit his house on the bank of the Musa river, and view his uniform, annually laid out on the day of his death, and then proceed to the tomb.

RAZAI. HIND. A counterpane quilted with cotton.

RAZQAQ. ARAB. Food.

RAZI, JAV., *qu. Rassi*, ARAB. A ferment used in Java in the distillation of the fermented liquor called Badek.

RAZI, the literary name of Muhammad-bin-Zakariah Abu Baqr-ur-Razi, from which place he was known in Western Europe as Rhazes or Razes. He was a famous physician, born and brought up at Rai, in Irak-i-Ajami, now designated Turkish Arabia. He acquired great philological and philosophical knowledge, but until he was 80 years

old, he was chiefly known as a musician. After his fortieth year, he applied himself exclusively to the study of medicine and philosophy, and studied under Ibn Zaiu-u-Tabari at Baghdad. He travelled to Jerusalem and Africa, and it is said also to Spain. He became the medical superintendent of an hospital at Rai, and afterwards of one at Baghdad. He died A.D. 923 or 932, at Rai or Baghdad. All his works were published in folio, A.D. 1516, and were translated by Dr. Meade into English, A.D. 1747.

RAZI-NAMA, an acquittal, literally a deed of consent or acquiescence.

RAZZIA BEGUM, known also as the Sultana Razzia, was the daughter of Shams-ud-Din Altamsh. On the death of Altamsh, his son Rukn-ud-Din was deposed after a reign of seven months, and his sister Razzia Begum raised to the throne (A.D. 1236, A.H. 634) under the title Sultana Razzia. She could read the Koran correctly; and her business talents were of so high an order, that Altamsh, when absent on his southern campaigns, twice left her in charge of his government in preference to his sons. She succeeded in sowing dissensions amongst the two factions that opposed her. She appeared daily on her throne in the usual habit of a sultan, gave audience to all comers, reformed abuses, revised the laws, decided suits of importance, and evinced all the qualities of a just and able sovereign. Ferishta says she was endowed with every princely virtue, and those who scrutinize her actions most severely will find in her no fault but that she was a woman. But she showed undue, though not criminal, partiality towards her Master of the Horse, an Abyssinian; allowed him to lift her up to her horse, and gave him the title of Amir-ul-Umra, which disgusted the nobles, as it placed him above all others. A rebellion followed, her army mutinied, and she was made prisoner, and committed to the care of Altunia, a Turki chief, while her brother Bahram was raised to the vacant throne. But she gained over Altunia, who married her, and, aided by her husband, she advanced to Delhi, but after two bloody battles they were both taken prisoners, and both were put to death. Her reign lasted 3½ years.—*Elliot's Historians*; *Elphinstone*, p. 324.

REA, a former subdivision of the rupee at Bombay; 100 rea = 1 quarter, and 4 quarters = 1 rupee.

READYMONEY. Sir Cowasjee Jahangir Ready-money, C.S.I., a highly liberal merchant of Bombay, whose gifts in charity during his life amounted to about £200,000. He died 19th July 1878.

REALGAR, red arsenic, red orpiment.

Hiung-hwang, . . . CHIN.	To-hung, . . . CHIN.
Hwang-kin-Shih, . . . "	Disulphide of arsenic, ENG.
Ming-hung, . . . "	

It occurs native in Yunnan, Kwei-chau, and Kansuh. It is used in soldering gold, also for the manufacture of ornamental vessels and medicine cups.—*Smith*.

REANA LUXURIANS has been introduced into the Madras Presidency. Mr. Whiteside planted the seed in clayey soil, well manured, and with water near the surface. The plants were 5 feet apart, and grew to a height of 12 feet. When half grown, the grass was eaten greedily by cattle and sheep, which fattened on it. Mr. H. T. Ross, when sub-collector of Bellary, fed a number of his own milch cows with it. He found that it doubled their yield of milk, and they were so fond of it

that they would break through any fence to get at it. The cultivation has been successful on the Neilgherries.

REANG, a mixed race or half-breed between the low Tiperah tribes and the Kuki.—*Cal. Rev.*, 1860.

REAUMURIA HYPERICOIDES is a plant of Syria and Persia, and *R. vermiculata* is a native of Sicily, Bombay, and Egypt. This plant resembles *Salsola fruticosa*. It is used at Alexandria as a remedy for the itch, being bruised and applied externally, and a decoction taken internally.

REBARI. Throughout Hindustan the Rebari rear and tend camels, and are in many places Muhammadans. In Rajputana they are a distinct tribe following Hinduism, employed entirely in rearing camels, or in stealing them, in which they evince a peculiar dexterity, uniting with the Bhatti in the practice as far as Daodpotra. When they come upon a herd grazing, the boldest and most experienced strikes his lance into the first he reaches, then dips a cloth in the blood, which at the end of his lance he thrusts close to the nose of the next, and, wheeling about, sets off at speed, followed by the whole herd, lured by the scent of blood and the example of the leader. The Rebari of Gujerat are nomade shepherds, who rear camels, sheep, and goats, and subsist by the sale of the wool and milk, and not of the animals.—*Tod; Wilson*.

RECCAN or Rakan River, on the Sumatra coast, in lat. 2° 10' N., and long. 100° 37' E., is about 15 miles broad at its mouth. It has at its entrance two islands; Pulo Lalang Besar, the larger, is in lat. 2° 12' N., and long. 100° 36½' E.; and Pulo Lalang Kechel. Its main branch, called the Tannah Putie river, takes a S.E. direction. The mouth of the river is almost dry at low water of spring tides; the tide enters it there at a speed of 7 miles per hour, producing a bore of 30 feet at spring tides.

RECORDER, the designation of the Chief Justice of Singapore, Rangoon, Moulmein.

RED.

Lal,	HIND.	Deng,	SIAM.
Abang,	MALAY.	Erra, Yerru, . . .	TEL.
Surkh,	PERS.		

Red is one of the primitive colours, of which the chief commercial varieties are fine venetian, red lead, orange and Indian red, and vermilion. The colour is esteemed sacred by several tribes, from China to Caucasus, from Tibet and Bhutan to the extremity of India, and to Ceylon.—*Ouseley's Tr.* i. p. 87.

REDANG ISLANDS, from lat. 5° 38' N. to about lat. 6° N., on the east coast of the Malay Peninsula, in the Gulf of Siam, along which they form an extensive chain. Turtle and Kimor, or large scallops, are procurable on the N.E. side.

REDDI. TAM., TEL. In Southern India, an enterprising race of agriculturists who have migrated from their original seats near Rajamundry over the whole of Southern India, also into Maharashtra, being met with as far north as Poona, wherc they are considered the most thriving cultivators. The old rulers of the Telinga country were styled Reddi; and so late as 1846, Narsimma, a Reddi, on the borders of the Bellary and Kurnool collectorates, though surrounded by the Indian army, thought himself capable of opposing the British Indian Government, rebelled, and was

put down by a military force. Among the Reddi of Southern India, a young woman of sixteen or twenty years of age may be married to a boy of five or six years of age. She, however, lives with some other adult male, perhaps a maternal uncle or cousin, but is not allowed to form a connection with the father's relatives; occasionally it may be the boy-husband's father himself, that is, the woman's father-in-law. Should there be children from these liaisons, they are fathered on the boy-husband. When the boy grows up, the wife is either old or past child-bearing, when he in his turn takes up with some other 'boy's' wife in a manner precisely similar to his own, and procreates children for the boy-husband. Reddi Bummala Wanloo, TEL., people of the Reddi caste.—*Shortt, Tr. Ethn. Soc., New Series*, vii. p. 194; *Lubbock, Orig. Civil.* p. 55.

REDFIELD, W. C., of New York, advocated the opinion that hurricanes are great whirlwinds.

RED FISH of the Pacific Ocean is the *Holocentrus ruber*. A red fish eaten by Captain Cook's crew proved poisonous to some who partook of it. Red fish is a condiment of the Malay Peninsula; fish roes and sardines are made into condiments, and the species of fish used in their preparation are *Alausa toli* (Ikan truboh), *Engraulis Brownii* (Bunga ayer or badah), *Dussumieria acuta* (Tamban-bulat), and *Clupeonia perforata* (Tamban-nepes or batuh). *Engraulis Brownii*, *Gmelin*, inhabits the sea and the estuaries of all seas. Total length, 6 inches. In Java, Sumatra, and the Straits of Malacca, large quantities are preserved both for home consumption and exportation to China and India. The delicious condiment is famed under the denomination of red fish (Ikan merah of the Malays) or Malacca fish, and is used as a relish. At Bencoolen and Malacca, after the heads have been removed, the fishes (those of middling size are preferred) are cleansed, salted (in the proportion of one to eight parts of fish), and deposited in flat, glazed earthen vessels. In the latter they are for three days submitted to pressure by means of stones placed on thin boards or dried plantain leaves. The fishes are next freed from salt, and saturated with vinegar of cocoa palm toddy, after which are added vinegar with powdered ginger and black pepper (the latter mostly entire), and some spirits and powdered red rice. After having been kept for three days, a little more vinegar is added before placing the fishes in well closed jars or bottles. They should be kept four or five months before being used. The expenses of a quart bottle of the condiment is about 30 cents, the selling price one Spanish dollar. Chinese settlers in the Straits prepare a similar red condiment with slices of *Polynemus Indicus* and *P. tetradactylus*, and also with prawns.—*W. T. Lewis, Esq., Penang; G. Bennett*, p. 21.

RED-HAIRED, Hang-Mao of the Chinese; British foreigners are so called.

REDIF. Padre Redif, a Christian priest, and a body of Muhammadan Mullahs, in the reign of the emperor Akbar, carried on a debate on religion before an assembly of the learned of all religions; a decided advantage, both in temper and argument, was given to the Christian. Akbar reproved the Mullahs for their violence, and expressed as his opinion that God could only be adequately worshipped by following reason, and

not yielding implicit faith to any alleged revelation. The disputants split on the divinity of their respective scriptures; and Abul Fazl says the Christians offered to walk into a flaming furnace, bearing the Bible, if the Muhammadans would show an equal confidence in the power of the Koran to protect them. To this, he says, the Muhammadans only answered by reproaches. The missionaries, on the other hand, say the proposal came from the Muhammadans, and was rejected by them, contrary to the wish of Akbar.—*Elph.* p. 470.

RED LEAD, vermilion.

Isreng, ARAB.	Sada langgam, . . . MALAY.
Minium, FR., LAT.	Tennearea, MALEAL.
Minning, GER.	Sandura, SANNEK.
Sandur, GUJ., HIND.	Segapu sindoorum, . . . TAM.
Minio, IT.	Yerra sindoorum, . . . TEL.

Red lead is massicot finely ground and calcined. It is a red powder, but with a liability to become black, and is used in painting, in the manufacture of glass, in surgery, etc.—*Waterston; McCulloch.*

RED MANGROVE or Paletuvier is the *Rhizophora* candel. Its branches, though they bend downwards, do not take root in the ground. The wood is heavy, of a deep red, and takes a fine polish. The bark is used in dyeing red, is astringent, and used in the West Indies for the cure of fevers, as well as of the bites of venomous insects.

RED RICE is the variety of *Oryza sativa* called *glatinosa*, the pulut or brasse pulut of the Malays. In the Straits Settlements, red rice is imported from China, and sells at the rate of 10 cents of a dollar per lb.

RED SAND of Cape Comorin is a kind of small garnet sand, much used by the natives for polishing gold and silver. Other sands from the same locality are objects of curiosity, the white resembling grains of rice. The whole bench to the westward of Cape Comorin, to the extent of several miles, is generally covered at different seasons with red sand, and immediately on the opposite side, to the eastward, almost entirely with black sand.—*M. C. C.*

RED SEA, the Arab *Bahr-el-Ahmar*, or *Bahr-el-Hejaz*, the ancient *Sinus Arabicus*, is an arm of the sea extending from the Arabian Sea towards the N.W. between Arabia and Africa to a distance of 1400 miles. It is entered at the south extremity by a strait, the *Bab-ul-Mandab*, 18 miles in width. At the broadest part (lat. 16° N.), it is 221 miles in width. Towards the north end it gradually contracts, and at length divides into two arms,—the Gulf of Akaba (*Sinus Aelanites*) and the Gulf of Suez (*Sinus Heroopolites*), the *Bahr Suez* or *Bahr Kulzum* (so called after the ancient *Klysma*). The sea averages 400–600, and is at places 1054 fathoms in depth, but the shores are flanked by a network of coral reefs and islands which often extend a long way from the coast. Its area is 123,500 square geographical miles. No rivers fall into the Red Sea, but a number of intermittent rain torrents descend from its banks.

The colour of the water changes with the depth. It is of a blue colour changing to pale green where there are shoals or reefs near the surface, but varies also with the changing winds and colour of the sky. No satisfactory reason for the modern name of the sea has yet been given. In the deep water, the colour does not vary more than in other

seas. But the name has led to surmises. One suggestion has been the prevalence of the *Oscillatoria rubescens* of Ehrenberg, who, while sailing in this sea, observed that the occasional red colour of its waters was caused by enormous quantities of this animal, which seems to be the same with what Haller described as a purple conferva swimming in water. The alleged red colour is, however, also supposed to be from the *Trichodesmium erythraeum*, a filamentous alga. It is described as of a blood-red colour, often covers large areas, and appears and disappears somewhat capriciously. It has as synonym *T. Ehrenbergii*. *T. Hindsii*, also of a blood-red colour, has been found off the west coast of South America. Under the microscope, the *Trichodesmium* seems like sheaves of minute fibres. Dr. Collingwood, however, mentions that he had never seen red *Trichodesmium*, or any tint of red. He had seen it yellowish-brown. He had seen the Indian Ocean red from myriads of minute red crustacea, and the sea in the Formosa Channel red from gelatinous worms, but never by *Trichodesmium*.

The difference between high and low tide is 3½ to 7 feet. The prevalent wind in the north part of the sea is from the north, and in the south part the S.E. wind in winter, and the N.W. in summer. The littoral consists of barren rock or sand. A little way inland the mountains rise to a height of 4000 to 7000 feet.

Much of the region is volcanic, and some of the islands still emit smoke. The island of Perim is trachytic; the culminating points of the island reach an elevation of 228 feet, and prove that the island itself is the result of a volcanic eruption under the sea. The lava had first raised up the large bank of Madrepore which covered the bottom, and had then forced its way through the interstices, and become visible over the water. This volcano, the vast crater of which embraced the bay of Perim, in course of time covered the new island with mud, ashes, trachytic blocks, etc., and then became extinguished.

The fauna and flora of its coasts and seas have been described by several naturalists, who have noticed the flights from shore to shore of locusts and quails and pigeons.

So far back as the time of Solomon, the navigation of the Red Sea was of importance, and several of the seaports, such as Berenike and Myos Hormos, were celebrated.

The commercial routes between the west and the east from pre-historic times had been three, viz. the Red Sea, by the Euphrates and Tigris, and Persian Gulf, all of them known to the ancients as the Erythrean seas. Political changes led to some one of these being preferred, the others being for centuries neglected, or even forgotten. Scylax had, by the order of Darius, dropped down the river Indus, coasted Arabia, and thence reached the Red Sea. It was the wish of Alexander the Great to recover the Indian trade from the Sabaeans, and bring it through the Red Sea, but his early death prevented this being attained. Eudoxus of Cyzicus in Asia Minor went to Alexandria to persuade Euergetes to give him the command of a vessel for this voyage of discovery. A vessel was given him, and though he was but badly fitted out, he reached a country, which he called India, by sea, and brought back a cargo of spices and precious stones. He wrote

an account of the coasts which he visited, and it was made use of by Pliny.

From that time till the years 1838-1840, the Red Sea route remained neglected, but since then it has again become the great highway of commerce. For the rapidity that it has attained to its present magnitude, the world is largely indebted to the officers of the Bombay marine and Indian navy. In 1796, a chart was constructed by Lieutenant White. Some sailing directions were drawn up by Sir Home Popham during an expedition sent from India to Egypt in 1800. Captain Court, in whose ship *Lord Valentia* sailed, also made charts of some parts of the western coast of the Red Sea. But later on, from 1830, surveys of this and its neighbouring seas were made by Captains Moresby and Elwon, and under them were Captains Carless, who afterwards surveyed the coast of Sind; John and James Young, Pinching, Powell, Barker, the Abyssinian traveller; Christopher, the pioneer of the Indus, who fell at Multan; Wellsted, the accomplished author; and Felix Jones, a skilled draughtsman. The charts continued to be published until 1841. Subsequently Moresby, aided by James Young, Robinson, Barker, Macdonald, Riddle, Christopher, Michael, Lynch, and Felix Jones surveyed the Maldive Islands. In February 1837, Moresby proceeded to the Chagos Archipelago, and afterwards to the Seychelles, and returned to Bombay in September 1838. Captain Haines, in October 1833, commenced the survey of the south coast of Arabia, with Lieutenants Saunders, Grieve, Rennie, and Cruttenden, and Dr. Hutton, but it was discontinued in 1837. Most of these officers wrote memoirs of the countries surveyed.

The Red Sea was long supposed to be 36 feet higher than the Mediterranean, and the Persian Gulf rather less. The French engineers also, at the beginning of the present century, came to the conclusion that the Red Sea was about 30 feet above the Mediterranean; but the observations of Mr. Robert Stephenson, English engineer, at Suez; of M. Negretti, the Austrian, at Tineh, near the ancient Pelusium; and the levellings of Messrs. Talabat, Bourdaloue, and their assistants, between the two seas, proved that the low-water mark of ordinary tides at Suez is rather more than one inch lower, and the formation of the Suez canal followed. The formation of the Suez Canal has made the Red Sea again the great highway between Europe and the Indies, and large ships of all nations are now seen in it. It was planned by Count de Lesseps, and is the greatest work of man.

The traffic between the different places on the coast is carried on by coasting vessels (*Katera Baye*); *Sambuk* (vessel of medium size, with a short cut-water; *Bagla*, the same without cut-water; *Dau* or *Dowrangah*, the same, with a large stern and a long cut-water. Regular communication between some of the most important places is also kept up by the Egyptian steamers which ply fortnightly between Suez, Jedda, Sauaken, and Masaua. Steamers of the Austrian, Lloyds, and others also ply between Suez and Jedda at the time of the Mecca pilgrimage. On the African side of the Red Sea, there is not a single place of consequence between Suez and Koser (*Cosseir*).

Koser (1200 inhabitants) is the harbour of Upper Egypt, from which it is 4½ days' journey in a straight line. It was formerly one of the

chief outlets for the products of Egypt, particularly grain; but since the opening of the Suez railway it has lost nearly all its importance.

Souakin (10,000 inhabitants) possesses a good harbour. It was ceded to Egypt by the Turks in 1865, and since that period it has rapidly improved. It was formerly an important dépôt of the slave trade.

Masaua (5000 inhabitants), the seaport of Abyssinia, belonged to the Turks as early as 1557, and has recently been ceded to Egypt. The climate is very hot. On the Arabian side, the seaports of the province of Yemen are Mocha, Hodeda, and Lohaya. Mocha has fallen entirely to decay, and Hodeda nearly so. These places have been superseded as seaports by Aden.

The most important seaport in the Red Sea, the great focus of oriental trade, and one of the wealthiest towns in the Turkish empire, is Jedda, situated 46 miles to the west of Mecca, of which it is the port. Pilgrims from every Muhammadan country converge here, and the merchants transact business with the devotees on their arrival and departure. The inhabitants trade with the interior of Arabia, with Egypt, East Africa, as far as Mozambique, Mesopotamia, Persia, India, and the Malay Islands. Jedda is the chief market for pearls, mother-of-pearl, and black coral, and for the coffee, balsam, sesua leaves, aromatic herbs, and horses and donkeys which Arabia produces. It is also a great dépôt of oriental carpets, muslins, woollen and silken stuffs, spices, and other products, which are exported to the western Muhammadan countries. The imports are corn, rice, butter, oil, and not unfrequently slaves. The harbour lies at a considerable distance from the town, which can only be approached by small craft. The town was taken by the Egyptians in 1836, but since 1840 has again belonged to the Turks. In 1858, a massacre of the Christians took place, on which occasion the French and British consuls were murdered, and in consequence the town was bombarded by the British.

To the north of Jedda lies Yemba, the seaport of Medina, which lies about 92 miles to the east of it. It is called Yemba-el-Bahr, and has about 2000 inhabitants only, lies in a sterile region, while the larger town of Yemba-el-Nakhl, with about 5000 souls, situated nearly a day's journey inland, is surrounded with palms and other vegetation.

There are no harbours of note between this point and Suez, but El Wejj, opposite Koser, is an important quarantine station. Since the cholera was brought to Egypt by the Mecca pilgrims in 1865, the quarantine establishment has been annually fitted up for a month and a half or two months at the time of the return of the pilgrims after the great Bahram festival. Both the caravans travelling by land and vessels of every nation from Arabian ports must undergo quarantine here for five days, or for a longer period if the outbreak of an epidemic is apprehended.

The great Mecca caravan which travels via Akaba passes this way both in going and coming. The town itself has 600 to 800 inhabitants only. The north part of the Arabian coast, as far as El Wejj, is under the supremacy of Egypt.—*The Red Sea and its Coasts*, by Dr. C., p. 13; *Klunzinger in Baedeker's Egypt*; *E. I. Marine Surveys; Asiatic Researches*, iii. p.

321, viii. p. 316; *Maury*, pp. 123, 247; *Burton's Mecca*, i. p. 288; *Ouseley's Tr.* i. p. 163; *Ajaib-al-Baldan*; *Pliny*, lib. vi. ch. xxiii. and xxiv.; *Curiosities of Science*, p. 176; *Sharpe's Egypt*, i. p. 403; *Collingwood's Voyage*; *Leonard Horner in Pr. Royal Society*, 1855; *Collingwood's Naturalist*.

RED SPIDER, one of the plagues of the tea-plant, an extremely small red mite that eats the cellular tissues of old leaf, and has a marked effect in checking the growth, especially in young plant. This noxious insect infests the rogu tree, *Nauclea cadamba*.

REDUVIUS, a genus of bug insects belonging to the Reduviidæ. *R. serratus* of India produces slight electric shocks.

RED WOOD is a commercial term applied to several timbers; one is the *Cæsalpinia sappan*, *Lin.*; another red wood tree is the *Adenanthera pavonina*, a large and handsome tree, and well suited for planting in avenues; also the *Pterocarpus Santalinus*, *Roxb.*, and the red wood of the Andamans is said to be the product of *Pterocarpus Dalbergioides*, *Roxb.*

The red wood fig-tree is the *Ficus racemosa*.

The red wood of Japan, *Fa-ang*, *JAP.*, also *Tsiampun*, *JAP.*, is a product of Coy or Kiu, in Thunberg's time belonging to the king of Siam. It was also obtainable in Bambilisoi, on the coast of Cambodia, and from Bimen Island, between Bali and Timor. It was imported into Japan, where, Thunberg remarks, 'this wood rubbed with some lime and water yields the finest violet colour we could wish to see.'

The red wood used in Japan for dyeing, called Ubar, is a red wood of Sumatra, resembling logwood. It is used by the natives in tanning twine for fishing-nets, and appears to be the okir or *Tanarius major* of Rumph. iii. p. 192, and *Jambolifera rezinoso* of Lour. Fl. C. C. p. 231.

The red wood of Mergui is the *Syndesmis Tavoyana*.

The red wood of Penang is in general use for furniture. Its colour is red, and its specific gravity 1.000.

A red dye-wood occurs in the Vizianagram zamindari.—*Marsden's Sumatra*, p. 95; *Thunb. Japan*, i. p. 42; *Col. Frith*; *Roxb.*

REED.

Kalam, ARAB. | Peru manal, TAM.
Baru, HIND. | Pedda rellu, TEL.

Reeds of the best quality of which pens are made are imported into India from Arabia, but inferior descriptions, from *Saccharum sara*, abound on many hills, and on the banks of rivers in India. Reeds for weaving are formed of these, though used also for pens. In Peninsular India, reeds for weavers are prepared by a class of persons, who also practise as oculists. The materials used for reeds are strips of several descriptions of reed; for silk weavers they are made of the fine teeth of the mango fish.—*Rohde's MSS.*

REEF or Shoal. Sha'b, ARAB. Darwin (*Researches*, p. 555) describes the lagoon islands, the encircling reefs, and the barrier reefs. Coral islands are arranged by Darwin into the atoll or lagoon island, a coral margin with a lagoon in the centre; barrier reefs, stretching along a vast extent of coast; and encircling coral reefs, which are merely fringes of coral along the margin of a shore. Von Birch is of opinion that the lagoon island is the margin of a sub-

marine crater on which the coral animal has built its wonderful structure. The barrier reefs, according to Darwin, are due to subsidence. In a sheltered archipelago, they rarely rise to the surface. But in an open ocean, rolling waves and breakers throw up a barrier of broken coral far above the usual high water-mark.

In New Caledonia the encircling reef extends 140 miles beyond the island. At Vanikoro, the reef runs two or three miles from the shore, from which it is separated by a channel from 30 to 50 fathoms deep. Externally, the reef rises from an ocean profoundly deep.

The great barrier reef which fronts the N.E. coast of Australia for nearly 1062 miles, runs parallel to the shore, at distances ranging from 20 to 70 miles, the enclosed sea, 31,860 square miles in area, varying in depth from ten to sixty fathoms. Sir Charles Lyell and Darwin think (557) that the great depths of the marginal seas is caused by the subsidence of the land, the corals raising their structure as the lands subside.

There are innumerable coral reefs and coral islands, but Darwin has satisfactorily shown that atolls, or annular reefs, were originally fringing reefs constructed around islands that have since subsided. Coral reefs have thus been divided into three classes, according to their geological character,—the shore reefs fringe the shores of continents or islands; the encircling reefs or barrier reefs; the third, enclosing a lagoon, is called an atoll, or lagoon island, and is a ring or annular breakwater around an interior lake. In the Archipelago and the Pacific are many coral islands or atolls. An atoll differs from an encircling barrier reef only in the absence of land within its central expanse; and a barrier reef differs from a fringing reef, in being placed at a much greater distance from the land, with reference to the probable inclination of its submarine foundation, and in the presence of a deep water lagoon-like space or moat within the reef. Atolls sometimes constitute a great circular chain enclosing a deep basin, but opening by one or more deep breaches into the sea. Sometimes they surround a little island by a girdle of reefs; or form the immediate edging or border of an island or continent. Atolls occur in the Pacific, in the Chinese Seas, in the Marianne and Philippine Islands, Maldives, Laccadives, and Sunda group.—*Darwin on the Structure and Distribution of Coral Reefs*; *Hartwig*.

REEPERS are longitudinal sections of the palmyra palm, used for building purposes; the trunk of the tree is split into eight for reepers, and these are dressed with an adze. In Ceylon, they are made of the kittool palm, and known as *Nipera reepers*; these are dearer than any other kind, they last in many instances for 50 or 60 years.—*Simmonds' Diet.*

REFUGE CITIES, or Sanctuaries, cities where criminals and others obtain refuge. See *Bast*; *Hebron*; *Kedish*; *Shechem*.

REG. PERS. Sand; hence *Registhan*, a sandy desert, the Baloo-desa of India. *Reg-rawan*, the moving sand. *Regi*, a sandy soil.

REGENT BIRD, of Australia, is the *Sericulus melinus*. It builds its nest in bowers, like the satin bird and bower bird. It is also called the king honey bird. Bennett says it is the *S. chryscephalus*.

REG MAHI, a small mottled lizard, *Lacerta scincus*, Linn., from 6 to 8 inches in length, found in the sands of Sind, and occasionally in dry tracts of the Multan division. This reptile used to be formerly in the *Materia Medica* of Europe as a restorative stimulant and antisiphilitic. Even some modern physicians, however, have justified the use of these animals.

REG-RAWAN, or moving sand, is a small hill in the Kohistan, forty miles north of Kābul, remarkable for a bed of sand on its southern face. This is subject to sliding movements, which occasion sonorous sounds. It is styled the Khwaja Reg-rawan. A whitish streak is observed, extending from the summit to the foot. It is mentioned by Baber. The natives say that it runs up again, and that it is never diminished; and that there is a cave at its foot where noises are heard.

Burnes describes the sounds as loud and hollow, very like those of a large drum; whilst Sultan Baber, in his Memoirs, speaks of the sounds of drums and nagarets, and the same instruments were specified by the Friar Odoric. A still more apt comparison is afforded by Captain Newbold's account of the like phenomenon in the Sinai desert, at the sand-hill known as Jabal Nakus, 'the hill of the bell.' Dr. Wallin also was told when crossing a wadi of the Sinai desert, called Hamade, near Wadi Araba, that sometimes very strange sounds, like those of kettle-drums or nakkara, were heard to rise from the earth, without any discoverable cause. Friar Odoric gives an account of a sandy hill, on which he heard the sound of invisible nakkara or drums. Mr. C. R. Markham, C.B., says the musical sounds caused by moving sand, which astonished Odoric, are heard also in the deserts of the west coast of Peru. Mrs. Markham and himself heard them when they halted amidst the medano or hills of light sand in the Arequipa desert. Another case was discovered by the late Hugh Miller in the island of Eigg (Cruise of the *Betsy*, quoted in Petermann's *Mittheilungen*, 1858, p. 405). Mr. Bollaert notices the Bramador or rumbling mountain of Tarapaca, which appears to be distinct from Mr. Markham's.—*J. G. S. xxi. p. 104; Yule, Cathay, i. p. 244; Burnes Travels.*

REGULATION and Non-Regulation are terms employed in the administration of British India to indicate provinces and districts under different forms of laws. The Regulation Provinces, as a rule, are governed under the provisions of Acts of the Supreme Council of India, or by Acts of the British Parliament, and the administrative officers are designated judges and collectors. Non-Regulation Provinces, again, are under the control of Commissioners, who rule in accordance with local provisions, often founded on previous decisions, and the Chief Commissioners and Commissioners are sometimes civilians and sometimes military men.

REGULUS CRISTATUS, the golden-crested wren of Europe, N. Asia, Japan, W. Asia, Barbary, is partially migratory. It is replaced in the W. Himalaya by *R. Himalayensis*. The *Reguloides prorégulus* (*Regulus modestus*, or *Dalmatian regulus*) of Asia is very rare in Europe,—one specimen obtained in Dalmatia, and another in England,—but it is common in India, with several allied species. See Birds.

REGUR. Dec. The black soil of the volcanic regions. See Soil.

REH has its origin in the decomposition of the elements of the rocks and soils under the action of air and water, and the rain-water washes out the soluble carbonates of lime, and alkaline chlorides, and sulphates, and carbonates, which are formed into carbonate of lime, carbonate of soda, sulphate of lime, chloride of soda, sulphate of soda, sulphate of magnesia, which effloresce on the surface of the ground.

Reh is thus not a special salt, or mixture of salts, but a very variable compound. It is really the most easily soluble salt in the earth water, remaining in solution after the decomposition of carbonate of lime, and on evaporation. The ingredients and their relative proportions are found to vary in different places, exactly as the well waters at different spots differ in saline contents, and in the same area there is a close relation between the two.

Deterioration of the land irrigated from the Ganges and Jumna canals attracted serious attention in the villages along the Western Jumna canal, and its branches, about Delhi, Paniput, Rohtak, and Kurnool. In 1857, Mr. Sherer, joint-magistrate of Aligarh, examined the tracts of country deteriorated, and the picture presented by him of the suffering in some of the villages was truly deplorable. Out of 580 canal villages, 59 or nearly 10 per cent. had been injured in degrees ranging from severely to partially, 6 per cent. being severely injured. The maximum appeared to be reached in Paniput, where 46 villages, or 19 per cent., were injured. Reh effloresces in several parts of the Panjab, where there are no canals at all; in these places it appears in land irrigated from wells where the water is very far from the surface. The efflorescing salt consists of sulphate of soda, with a variable proportion of chloride of sodium or common salt. As far as experience goes, lands near canals, like the Hasli, in the Lahore district, constructed at, but not below, the ordinary level of the watershed, are usually found to be free from reh efflorescence. Generally speaking, the farmers assert that fully impregnated reh land is incurable and valueless. In gardens and small plots, it has been found useful to dig out the soil to the depth of 2 feet or so entirely, and putting in fresh soil. Sluicing and irrigation has been recommended. Nitrate of lime is recommended as a probable chemical antidote for the salts of the reh. It has been known that the best remedy for reh is the saline efflorescence of old mortar on walls, or which appears on ground containing carbonate of lime and animal matter. In this substance nitrate of lime is found, and this salt would act by producing the insoluble carbonate of lime, and the sparingly soluble sulphate of lime, and the deliquescent nitrate of soda, instead of the efflorescent sulphate and carbonate of soda, which are the principal constituents of reh. Nitrate of lime is prepared by distilling shora or saltpetre with kabi safed, and neutralizing the acid liquor that passes over with chunam. The native cultivators, in some parts, have long been accustomed to employ ohikna kullur, or earth which looks damp; this earth is found where animal remains are deposited, and usually contains nitrate of lime. The reh is composed principally

of sulphate of soda and chloride of sodium, with, in some places, carbonate of soda; the sulphate and carbonate of soda are very efflorescent salts, and melt partly in their water of crystallization at a temperature of about 98°, while they are rather sparingly soluble when the temperature falls below 60°. Hence during the hot weather the reh melts and percolates the ground to some considerable depth; but as the weather becomes cooler, crystals form in this soil and form a capillary network, upon which it travels till it arrives at the surface, where the salt gives off its water of crystallization, and falls into a dry powder by efflorescence. If to a solution of these salts, nitrate of lime be added, no change is produced by it on the chloride of sodium, but the sulphate and carbonate of soda are converted into nitrate of soda, a deliquescent salt, while the lime is changed either into the insoluble carbonate of lime, or the sparingly soluble sulphate of lime, neither of which are efflorescent or in any way injurious to vegetation.—*Powell's Handbook*, pp. 95, 112; *Records Govt. of India*, No. 42 of 1864, *Note on Reh*, etc.

REHAT, in Buddhism, a being entirely free from evil desire, and possessing supernatural powers.—*Hardy's Monachism*, p. 440.

REHMANNIA CHINENSIS. *Tatarinov*.

Sang-ti whang, . . . CHIN. | Man-ti, . . . CHIN.
Shah-ti whang, . . . " | Shan-yuen, . . . "

A plant of the order Gesneraceæ. Its roots are sun-dried, and brought from Kwang-ping-fu in Peh-chi-li, from Yuen-chan-fu in Kiang-si, and very largely from Hwai-king-fu in Ho-nan. The root is deemed by the Chinese alterative and tonic.—*Smith's Mat. Med.*

REINHARD, WALTER, a native of the electorate of Treves, who came to India as a carpenter in the French navy. He took service with several native chiefs for brief periods, and then joined Gregory, an Armenian, who was in high employ under Mir Kasim, nawab of Bengal. After the fall of Monghir, he put to death all the English prisoners who had been collected at Patna. He next joined the Bharatpur chief, and from him finally went over to Najaf Khan. He died in 1778, and was buried at Agra. He was known as Sumru, and the Begum who had lived with him, and who is said to have been a Kashmir dancing girl, was recognised as his widow, and succeeded to all his Sardania estates. In 1781 she was received into the Catholic Church, and in 1792 married M. le Vaisseau, a French adventurer. He was so unpopular that the people rebelled under Zafar Yab Khan, a son of Reinhard, and by an artifice of the Begum her husband was induced to commit suicide, and the disturbance was soon after quelled by her old servant George Thomas. In 1802, Zafar Yab Khan died, leaving a daughter, who was married to Mr. Dyce, an officer of her army. She had a son and two daughters. The son, David Ochterlony Dyce Sombre, was adopted by the Begum, and on her death in 1836 he succeeded to the estate. He married Mary Anne, daughter of Viscount St. Vincent, and died in Paris in 1851. His widow in 1862 married the Honourable George C. Weld Forester, now Baron Forester. The Begum will left to schools and Romish churches, Rs. 8,74,400.—*Grouse*, p. 41.

REJANG is the alphabet of Lemba and

Pasummah on the western side of Sumatra. It consists of 23 substantive characters, formed of upright scratches or strokes, and on the whole it is more complete than either the Batak or Korinchi alphabets.

REJEEPAK, (lit.) pure veins, a term applied to Arabian horses of pure strain, many of which are bred on the Persian shore, with as much attention to preserve the original blood as imported from Arabia, as could be shown in first-rate studs in England.

RELIGION. Of the various religions in the world, according to Hassel, there are, in millions, Christians, 120; Jews, nearly 4; Muhammadans, 250; Hindus, 111; Buddhists, 315. Every religion, it has been remarked, 'even the most imperfect and degraded, has something that ought to be sacred to us, for there is in all religions a secret yearning after the true though unknown God.' Movers has illustrated the religious worship of Phœnicians and Carthaginians, from their temples; the religious idea of the Arab nomades, prior to the time of Mahomed, has been described by many; the idols and temples, the hieroglyphic inscriptions, the hieratic and demotic MSS., have afforded much information regarding the religion of Egypt. Further to the east, the monuments of Babylon and Nineveh have furnished materials for the study of the Semitic religions, and images of Bel and Nisroch have been produced, and something is now known of the religions of Mexico and Peru, and of the savage inhabitants of America, Africa, and Polynesia.

Of the religions of the S. and E. of Asia and the philosophies which take their place, the demon, and spirit, and nature worship of the ruder races is perhaps the most ancient; the monotheistic religion of the Jews, 4000 years old, may be the next, followed by the Buddhist philosophy, which seems to have been believed in since 3200 years, 850 years before Sakya gave it fresh vigour, and is the most extensive of all of them, with the Jaina faith, which is as old as that of the Buddhist.

The philosophy put forth by Kung-fu-tze or Confucius, was about 600 years before Christ, and it has been added to and altered by subsequent sages of China. The Christian religion, first established in Western Asia 19 centuries ago, and early taught in Africa, Arabia, and Central and Eastern Asia, has at present, in British India, but a comparatively small number of professors. If India and South-Eastern Asia be looked at in their religious aspects, four polytheist faiths will be seen,—Buddhism, the Jaina faith, Brahmanism, and Shamanism; three monotheistic faiths, viz. Jewish, Christian, and Muhammadan; a mixed faith, the Sikh, partly monotheistic, but believing in incarnations; and lastly the worship of fire as an element, by the little numerous but intellectual Parsees.

The canonical books of three of the principal religions of the ancient and modern world, viz. the Veda of the Brahman, the Zendavesta of the Zoroastrian, and the Tripitaka of the Buddhist, have disclosed the real origin of Greek and Roman, and likewise of Teutonic, Slavonic, and Celtic mythology. The Koran, and the literature connected with it, afford information regarding a Semitic religion, the doctrines of Mahomed,

Besides the Aryan and Semitic families of religion, there are in China three recognised forms of public worship,—the philosophy of Confucius, that of Tao-tze, and the religion or philosophy of Fo (Buddha).

The ancient history of India shows that it has had four great religious eras,—the *Vedic*, in which Agni, Indra, and other personifications of spiritual existences, with the worship of astral and natural phenomena, were propitiated with feasts, and invoked with the hymns of the Rig Veda, and in which maidens selected their husbands in the Swayamvara, and monarchs sacrificed the horse in the Aswa Medha. In the *Brahmanic* period, the Kshatriya feasts were converted into sacrifices for the atonement of sins against Brahmanical law, and divine worship was reduced to a system of austerities and meditations upon the Supreme Spirit as Brahma. It was in this era that the Brahmins assumed the character of a great ecclesiastical hierarchy, and established that priestly dominion which still extends over the minds and senses of the Hindus of India; 3dly, the *Buddhist* period, in which Sakya Muni appeared. And, 4thly, the *Brahmanical* revival, during which Brahmins abandoned the worship of their god Brahma, and reverted to the old national gods and heroes of the Vedic Aryans. In this era Vishnu came to be regarded as the Supreme Being, and Rama and Krishna as his incarnations, and it was accompanied and followed by a belief in a deity called Siva, whose worship, based on physiological doctrines, was earnestly inculcated by its missionaries during the 8th to the 14th century of the Christian era. Both of these sects of Brahmanism are accepted by the Hindus. But at present the largest number of the Hindus are followers of Vishnu and his wife, in some one of his several incarnations; a smaller number accepting Siva and his wife. Siva is mentioned in the book of Amos (v. 26), but when his worship was first introduced into India has not been traced. Tod supposes B.C. 900.

Since the 7th century of the Christian era, conquerors from the north-west, traders from Arabia, and zealous missionaries professing Muhammadanism, have been advancing into India, China, and the western islands of the Archipelago; and the numbers professing this faith in S. and E. Asia may now amount to about 200 millions of souls.

The Vedas of the Hindus are in Sanskrit. They do not seem to have been translated as a whole into any of the vernacular tongues of India, and there are but few Brahmins who can read and understand them, though they learn portions by heart. They are considered a revelation; and the laws of Menu, the Puranas or legendary histories of India, the Tantras, and the six orthodox Hindu systems of philosophy, all derive their authority from their agreement with the Vedas. It was the Vedas of which the Buddha Sakya Muni denied the authority. In the Vedanta philosophy, the beginning of all wisdom is said to be a desire to know God, who is the cause of the universe, and this is to be learned from the Scripture. The Nyaya philosophy acknowledges four sources of knowledge,—perception, induction, analogy, and the word or Veda. The Vaisesika philosophy is an atomistic system, not favourably looked on by the Brahmins, nevertheless proclaims the absolute

authority of the Veda. The Sankhya philosophy is atheistic; it maintains that a personal God cannot be proved, though it so far conforms as to admit the received doctrine of the Veda as evidence in addition to perception and induction. The Puranas, or old books, superseded the Veda. The Buddhist religion of Burma is likewise a philosophy. The British rulers of India have allowed the utmost religious freedom to all the races under their sway, and the Bible has never been used as a class-book in any Government school in British India. This has been denounced by earnest men as time-serving. However, the Koran and the Vedas are equally excluded; but the grant-in-aid rules of 1854 permit money allowances to every school in India where education up to a certain standard is imparted, and in these grants every Christian school can equally share. To gain a full knowledge of the Veda, the Zendavesta, the Tripitaka, of the Old Testament, the Koran, or the sacred books of China, would be the work of a long life.

Sir John Lubbock has pointed out that both in Aryan and Semitic races there have existed several minor creeds, which in process of ages have disappeared. In the Aryan race, for example, there have been the religions of Greece and Rome, Odin-worship, and Druidism. In the Semitic race, there have been the Assyrian, Phœnician, and sundry other idolatries. But in each race there has also been one great religion, which, beginning at the very dawn of history, has lasted to the present hour, namely, Vedic-Brahmanism among the Aryans, and Judaism in the Semitic race. And each of these great religions has had two vast offshoots or schisms, which also still survive, namely Zoroastrianism and Buddhism from Brahmanism, and Christianity and Islam from Judaism. Further, all six of these religions are possessed of a sacred literature, to which divine authority is attributed by their adherents, namely, among the Aryans—

The Vedas of the Brahmins.
The Zendavesta of the Zoroastrians.
The Tripitaka of the Buddhists.

And among the Semitic race—

The Old Testament of the Jews.
The New Testament of the Christians.
The Koran of Muhammadans.

Besides these Aryan and Semitic Scriptures, there only exist in the world two other ancient sacred books of any value, namely, the Kings of the Confucian Chinese, and the Tao-tze King of the Taoists of China; the Grunth of the Sikhs being a comparatively modern work.

Lastly, as if to perfect the parallel, recent calculations tend to show that at the present hour, after 4000 years of development, the great religions of the Semitic and Aryan races are almost on an equality in point of numbers—Brahmanism and Buddhism, with the small remnant of Zoroastrians, counting together (according to an authority accepted by Professor Muller) about 44 per cent. of the human race; and Judaism, Islam, and Christianity numbering nearly 45 per cent. on the same calculation.

The great bulk of the races in Southern and Eastern Asia are of the Muhammadan, the Buddhist, the Brahmanical, and Sinto religions. The Muhammadans believe in God, in a future state, in a judgment for blessing or for condemn-

ation, in Mahomed as the last and greatest of the prophets of God; in the Koran as a divine revelation; in khalifas as successors of Mahomed, and in many saints and shrines. They believe, also, in the coming of a Mehdi, who is to be the last of the Imams, and who will inaugurate an era when Islam, now militant, will be finally triumphant. They designate their religion Islam, salvation, and style themselves Musalmān, of the saving faith. Muhammadanism is essentially a proselytizing religion; the craving of all its professors being to convert all mankind to a belief in God and in Mahomed as His prophet. But with this as the essential tenet, they have many diverse sects, of every shade of belief, from a pure monotheism to a recognised series of incarnations still in progress. They occupy parts of Europe and Africa, much of the south of Asia, and eastwards into the Archipelago. In the south-west of the Asiatic continent, Persia with its 7,658,000 inhabitants is almost exclusively of the Shiah form of Muhammadanism, with a mere sprinkling of Jews, Armenian Christians, and Zoroastrian fire-worshippers. But Persia is almost alone in this form of the faith. It is enclosed on three sides by races following the Sunni traditions,—by Arabs to the S.W. and W.; by Turks in Asia to the N.W. and N.; with Uzbek also on its north; Bokhariots and Turkoman to the N.E., and Afghan tribes, Makrani, Baluch, and Sindi, on its east; and the Turkoman make the sectarian difference in their belief a ground for considering Persia heretical. Until the present day they raid Persian territory, and steal and sell the captives as slaves. Persia is to them a hostile country, a dar-ul-harb, on which they may lawfully make war. In this region the Muhammadan population is estimated to be 36,000,000.

Persians, . . .	7,658,000	Turkoman, . . .	450,000
Arabs, . . .	5,000,000	Afghans, . . .	4,000,000
Turkey in Asia, . . .	16,357,000	Sindi, . . .	1,887,204
Khiva Uzbek, . . .	700,000	Baluch, . . .	409,200
Bokhariots, . . .	2,100,000		

In India, the British Government, a Christian power, is ruling over a population of 253,891,821 souls, in diverse religious communities. A census taken in 1881¹ has shown their respective numbers to be as under:—

Hindus, . . .	187,937,450	Kabir Panthi, . . .	347,994
Muhammadans, . . .	50,121,685	Nat worship, . . .	143,581
Aboriginals, Non- Aryans, . . .	6,426,511	Parsee, . . .	85,397
Buddhist, . . .	3,418,884	Jews, . . .	12,009
Christian, . . .	1,862,634	Brahmo, . . .	1,147
Sikh, . . .	1,853,426	Kumbhi Patia, . . .	913
Jain, . . .	1,221,896	Others and un- specified, . . .	59,985
Satnami, . . .	398,409		

The non-Aryan races of India have not advanced beyond the idea of demons who scourge the human race. Many of them have totems; others are Shamanistic, and are continually finding new objects of worship in the spirits of men and women who have died a violent death, or have lived lives of turmoil. Mari Amman, or death mother, of the Tamil race, is a recently acknowledged divinity who sends smallpox. She is a compound of their Amman or village goddess and of Kali, the consort of Siwa. Since cholera has swept through the land, the people of Ujjain have formed a new goddess, Maha Kala, whom they believe sends that dread disease. A great number of the non-Aryan races are recognised to be of

Turanian descent. Many of them are in a servile condition, and until the present day are almost in a state of predial slavery, in some parts bought and sold with the lands. Many are illiterate, have no sacred books, and worship spirits, ancestors, idols, and shapeless stones from the river beds. But even amongst the followers of the Brahmanical Hindu faith and the Jaina sect, all of whom possess sacred books, there is found every conceivable kind of worship, from the grossest sensualism to the most exalted spiritualism, and from the worship of stocks and stones to the most sublime conceptions of the omnipresent God.

The Muhammadans are descendants of Arab, Turk, Moghul, and Persian invaders, and of converts from Hindus and aboriginal races. They are largely of the Sunni sect, but the unity of their creed and the firmness of British rule have done much to make them one body. With Brahmanism it is different. Of very varied origin, largely from a nature-worship, with a belief in mythological personages, and some of their chief gods deified princes, their beliefs are greatly diversified. Great minds are constantly arising and forming new sects or are pondering over problems, moral, social, and political. The Sikh, the Satnami, the Kabir Panthi are all recent, and the Brahmo is of the 19th century. Brahmanism is proselytizing by millions among the aboriginal races, but is loosening its grasp on many of the educated classes. The tendency is to adopt some form of philosophy as a substitute for their old traditional religions, and this seems likely to embrace the majority of the educated classes throughout India.

The most recent philosophy was originated by Ram Mohan Roy, a Brahman, and its best expounder at present (1883) is Keshab Chander Sen. The name assumed by the most prominent among them is that of Brahmo, and ramifications of this sect have spread throughout the presidencies of Bengal, Madras, and Bombay. They renounce superstition, paganism, and absurdities of all sorts. They abjure atheism and materialism; they repudiate Buddhism, Hinduism, and Muhammadanism. They regard Christianity, not as a religion to be adopted, but as one of several paths leading towards pure and abstract truth, and they look towards the Vedas and Puranas, handed down from the Aryan Hindus, as constituting another of these ways. There is a theism, including faith in a Supreme Being, in the immortality of the soul, and in a future state of rewards and punishments.

Sir Alfred C. Lyall thinks that in India there will, in two or three generations, be a wide and rapid transformation of its religion; that the old gods of Hinduism will die in their new elements of intellectual light and air. Some, he says, may think that Christianity will, a second time in the world's history, step into the vacancy created, and occupy the tracts laid open by the upheaval of a whole continent to a new intellectual level. But, he says, the state of thought in Western Europe hardly encourages conjecture that India will receive from that quarter any such decisive impulse as that which overturned the decaying paganism of Greece and Rome. Christianity has not yet spread sufficiently to have become an actual power in the country, but the Brahmoists admire Christianity in the main, as supplying a pattern for human conduct.

Under Hindu law, until 1850, a change of

religion by any Hindu involved loss of property; but an Act passed in that year by the Legislative Council of British India declared that change of religion did not involve loss of property.

East of British India, Buddhism has been favourably received by great nationalities. Tribes on the Assam borders, the people of Manipur, many broken tribes amongst the hills and the valleys of the Irawadi, the Mei-kong, and other great rivers, are following spirit and nature worship. The Malays of the Archipelago are now mostly Muhammadans, and the Spanish Indies in the Philippines almost all Christian; but Ceylon is partly Buddhist, partly Hindu; and Burma, Siam, Annam, Cochinchina, Cambodia, China, and Corea are chiefly Buddhist, though China largely follows the philosophy of Confucius or the corrupted Taoist philosophy of Meng-tze.

In the temples of Confucius in China, the only object of reverence is the monumental tablet before which the devout burn incense and pray. At the entrance of their Buddhist temples are colossal figures, supposed to be warders of the place; in all other temples are numerous idols, not only of Buddha in his three attitudes of contemplation, exhortation, and repose, but of many other deities, as the god of war, the god of agriculture, and the queen of heaven.

A prominent feature of Japan society is the variety of religious beliefs. The State cult is the Sinto (Sin, the gods, and Tu, faith), an apotheosis of all great heroes and saints. The Buddhists are there the more numerous sect, but their priests had become so singularly unacquainted with the tenets of their religion, that some inquirers recently visited England to study its doctrines in the books of the public libraries. The populations dwelling in these south-east regions of Further Asia have been estimated as under:—

Assam tribes, . . .	200,000	Sunda Islands and	
Manipur, . . .	126,000	Moluccas, . . .	28,867,000
Burma, . . .	4,000,000	Netherland India	
Siam, . . .	5,750,000	and part of N.	
Annam, . . .	21,000,000	Guinea, . . .	27,962,000
French Cochinchina, . . .	1,597,013	N. Guinea and	
Cambodia, . . .	890,000	neighbouring	
Malacca tribes, . . .	300,000	Islands, . . .	500,000
China proper, . . .	350,000,000	Philippines, . . .	6,300,000
Eastern Turkestan, . . .		Corea, . . .	8,500,000
Tibet, Manchuria, . . .		Japan, with the	
Mongolia, . . .	21,180,000	Kuriles, Loo-Choo, and	
Ceylon, . . .	2,606,930	Bo-nin Islands, . . .	36,357,212

—*Census Report*; *Sir John Lubbock's Darwinism in Morals*, p. 250; *Frere's Antipodes*, p. 229; *Max Muller, Chips from a German Workshop*, i. p. 12; *Sir Alfred C. Lyall, K.C.B., Asiatic Studies*; *Sir Richard Temple in Fortnightly Review*, Jan. 1883; *Albrecht Weber's Indian Literature*. See *Sacred Books*.

REMBOWAH. BURM. In Arakan used as food. This description of arrow-root is prepared from the Pembano root, obtainable in large quantities. Price, 4 rupees per maund.—*Local Committee, Akyab*.

REMORA, or sucking fish, attaches itself to sharks. The sucker is on the back of the head. Fishermen in the Mozambique Channel are said to pass a string through the tail, and allow the fish to swim away; it attaches itself to turtle and fish, which are then pulled in.

REMUSAT, ABEL, a learned Parisian sino-

logue; author of *Description d'un Groupe d'Iles peu connu et situé entre le Japon et les Iles Mariannes*.

RENAUDOT, ABBE, author of *Anciennes Relations des Indes et de la Chine*, Paris 1718. It gives the notes of travel of Suleiman and Ibn Khurdadba, two Arab merchants, who visited India and China apparently in the 9th and 10th centuries, and are the first among western writers to make mention of tea (tcha) and porcelain. They also mention arrack and rice.

RENNELL, MAJOR JAMES, author of a *History of India*. He was the first writer who gave any intelligible account of the countries now called British India, and has been styled the father of Indian geography. He was the author of a *Bengal Atlas*, containing Maps of the Theatre of War and Commerce on that side of Hindustan, London 1780; *Atlas of Bengal and Behar*, London 1780–81; *A Description of the Roads in Bengal and Behar*, 4to and 12mo, London 1778–99; *Memoir of a Map of Hindustan*, with an Account of the Ganges and Brahmaputra Rivers, London 1788; *Marches of the British Armies in the Peninsula of India during the Campaigns of 1790 and 1791*; *Geographical System of Herodotus Examined and Explained*, 4to, London 1800; *Geography of Herodotus Examined and Explained*, 2 vols., London 1830; *Geographical Illustrations of the Expedition of Cyrus and the Retreat of the Ten Thousand Greeks*, with the Plates, atlas folio, 2 vols. fol. and 4to, London 1816; *A Treatise on the Comparative Geography of Western Asia*, 2 vols. 8vo, London 1831.

RENNET. MASR, ARAB.; Panir, MAYA, HIND. The dried contents of the stomach of a calf, used for coagulating or curdling milk.—*Faulkner*.

RENUKA, daughter of king Renu, the wife of rishi Jamadagni, and mother of Parasurama; in S. India identical with the Gramma-deva, Ellammun.

REPOUSSÉ WORK in silver and gold is well made at Ahmadabad. It is beaten up first in small patterns, and holes are pierced to give effect to the pattern. At first sight, it might be mistaken for coarse filigree. Brass work of Nagpur, Jeypore, Moradabad, and in the south of the Peninsula has the body of the work in brass, and pure tin is hammered over it, leaving spaces of the ground as ornament. The white, bright tin resembles silver.

REPTILES are arranged by naturalists as the class Reptilia of the animal kingdom, and they are numerous in the south and east of Asia. The chameleons, the gecko, and others of them are interesting to all who would investigate the wonders of creation. The crocodile, the alligator, and the poisonous snakes cause great loss of human life; the marine turtles and their eggs, some of the frogs, some of the snakes, are used as food by several races; several of them, as the skinks, the iguanas, are used medicinally. The Greeks regarded snakes as good demons, and worshipped them; the emblem of their deified physician, Esculapius, is that of two snakes in congress; and from the earliest origin of Hinduism, its followers have worshipped the cobra, representing it in pictures and in sculptures with many heads as a protecting divinity overshadowing kings and deities and lingam idol. With Muhammadans, frogs, crocodiles, snakes, turtles, as also, indeed, crabs, are

REPTILES.

not lawful food. The arrangement by naturalists of the reptiles of the South and East of Asia is as under :—

FIRST SUB-CLASS — REPTILIA PROPER.

THE ORDER OF TORTOISES—CHELONIA.

I. Land Tortoises—Testudinidæ.

Testudo elegans, *Schoppf*, Peninsula of India, Ceylon.
T. Horsfieldii, *Gray*, Afghanistan.
T. elongata, *Blyth*, Cambodia, Arakan, Mergui.

II. Fresh-water Tortoises—Emydidæ.

Manouria emys, *M. and Schl.*, Penang, Arakan, Tenasserim.
Cuora Amboinensis, *Daud.*, Eastern India.
C. flavomarginata, *Gray*, China, Formosa.
C. trifasciata, *Gray*, China.
Cyclenys Oldhami, *Gray*, Mergui, Cambodia.
Pyxidea Mouhotii, *Gray*, Cochinchina.
Notochelys platynota, *Gray*, Singapore.
Geomyda spinosa, *Gray*, Tenasserim, Pegu.
G. grandis, *Gray*, Cambodia.
Emys ocellata, *D. and B.*, Tenasserim, Pegu.
E. Bealii, *Gray*, Southern China.
E. Thurgi, *Gray*, Bengal, Penang.
E. mutica, *Cantor*, Chusan.
E. nigricans, *Gray*, Southern China.
E. Sinensis, *Gray*, Canton, Formosa.
E. crassicollis, *Gray*, Mergui, Malay Peninsula, Cambodia.

E. Reevesii, *Gray*, Cochinchina, Southern China.
E. trijuga, *Schweigg*, Peninsula of India, Ceylon.
E. macrocephala, *Gray*, Siam, Cambodia.
E. Hamiltonii, *Gray*, Lower Ganges.
Pangshura tecta, *Gray*.
P. tentoria, *Gray*, Dekhan, Indus.
P. flaviventer, *Gthr.*, Bengal?
P. Smithii, *Gray*, Panjab?
Batagur baska, *Gray*, Ganges, Irawadi, Penang.
B. lineatus, *Gray*, Nepal, Moulmein.
B. Elliotti, *Gray*, Kistna river.
B. affinis, *Cantor*, Malay Peninsula.
B. dhongoka, *Gray*, Nepal, Assam.
Platysternum megacephalum, *Gray*, China, Pegu.

III. Fresh-water Turtles—Trionycidæ.

Emys granosa, *Schoppf*, Hindustan, Sikkim, Bengal.
E. Ceylonensis, *Gray*, Ceylon.
E. vittata, *Peters*, Goa.
Trionyx Sinensis, *Weigm.*, China, Chusan, Formosa.
T. Gangeticus, *Cuv.*, Ganges, Penang.
T. Javanicus, *Schweigg*, Ganges, Dekhan, Penang.
T. ornatus, *Gray*, Siam, Cambodia.
T. subplanus, *Schweigg*, Singapore, Penang.
T. Guntheri, *Gray*.
Chitra Indica, *Gray*, Ganges, Malay Peninsula.

IV. Marine Turtles—Cheloniidæ.

Cauana olivacea, *Eschsch.*, Coasts.
Chelonia virgata, *Flem.*, Coasts.
Caretta squamata, *L.*, Coasts.
Dermatochelys coriacea, *L.*, Coasts.

THE ORDER OF LIZARDS—SAURIA.

I. Crocodiles—Crocodylidæ.

Crocodylus palustris, *Less.*, Ganges, Peninsula of India, Ceylon.

C. Siamensis, *Schneid.*, Siam, Cambodia.
C. porosus, *Schneid.*, all rivers.
C. Pondicerianus, *Gray*, Pondicherry
Gavialis Gangeticus, *Gm.*, Ganges.

II. Water Lizards—Varanidæ.

Varanus flavescens, *Gray*, Ganges, Indus, Penang.
V. dracula, *L.*, from Bengal to Ceylon.
V. lunatus, *Gray*.
V. nebulosus, *Gray*, Bengal, Siam.
Hydromaurus salvator, *Laur.*, China, Siam, Ceylon.

III. Land Lizards—Lacertidæ.

Tachydromus sexlineatus, *Daud.*, Rangoon.
T. meridionalis, *Gthr.*, Southern China.
T. septentrionalis, *Gthr.*, Northern China.
Cabrita Leschenaultii, *Edw.*, Coromandel.
Ophiops Jerdoni, *Blyth*, Mhow.

REPTILES.

Acanthodactylus Cantoris, *Gthr.*, Ramnuggur.
A. Neilgherrensis, *Jerdon*, Kunur.

IV. Cordylæ—Zonuridæ.

Pseudopus gracilis, *Gray*, Khassya.

V. Skinks—Scinoidæ.

Tropidophorus microlepis, *Gthr.*, Chartaboum.
T. Cochinchinensis, *Cuv.*, Cochinchina.
T. aspris Berdmorrelli, *Blyth*, Mergui.
Euprepes Chinensis, *Gray*, China.
E. rufescens, *Shaw*, from Afghanistan to China.
E. monticola, *Gthr.*, Sikkim.
E. olivaceus, *Gray*, Malay Peninsula.
E. macularius, *Blyth*, Rungpur?
E. trilineatus, *Gray*, Carnatic.
Mabouia quadrilineata, *Blyth*, Hong-Kong.
M. Chinensis, *Gray*, China.
M. maculata, *Blyth*, Assam.
Eumeces bilineatus, *Gray*, Neilgherries.
E. Himalayanus, *Gthr.*, Himalayas.
E. Schlegelii, *Gthr.*, Sikkim.
E. moicestus, *Gthr.*, Ningpo.
E. Reevesii, *Gray*, China.
E. ladacensis, *Gthr.*, Tibet.
E. formosus, *Blyth*, Mirzapore, Wazirabad.
E. Indicus, *Gray*, Sikkim.
E. Taprobanensis, *Kelaart*, Ceylon.
E. chalcides, *L.*, Penang, Siam, Hong-Kong.
E. Siamensis, *Gthr.*, Siam.
E. Bowringii, *Gthr.*, Hong-Kong.
E. albonotatus, *Gray*, Nellore, Mergui.
E. Hardwickii, *Gray*, Peninsula of India.
E. punctatus, *E.*, Peninsula of India.
E. isodactylus, *Gthr.*, Cambodia.
Hagria Vosmerii, *Gray*, Bengal.
Chiamela lineata, *Gray*.
C. anguis melanosticta, *Merr.*, Coromandel.

VI. Acontiads—Acontiadidæ.

Acontias Layardi, *Kelaart*, Colombo.
Nessia Burtonii, *Gray*, Ceylon.
N. monodactyla, *Gray*, Ceylon.

VII. Sand Lizards—Sepsidæ.

Sphenoccephalus tridactylus, *Blyth*, Afghanistan.

VIII. Geckos—Geckotidæ.

Gecko guttatus, *Daud.*, from Southern India to China.
G. stentor, *Cantor*, Penang.
G. Smithii, *Gray*, Prince of Wales' Island.
G. monarchus, *D. and B.*, Malay Peninsula, Ceylon.
G. Japonicus, *D. and B.*, China, Chusan.
G. Swinhonia, *Gthr.*, Northern China.
G. subpalmatus, *Gthr.*, Chikiang.
Ptychozoon homalocephalum, *Creveldt*, Penang, Singapore.

Hemidactylus triedrus, *Daud.*, Ceylon, Pen. of India.
H. maculatus, *D. and B.*, from Ceylon to China.
H. Sykesii, *Gthr.*, Dekhan.
H. frenatus, *D. and B.*, from Ceylon to Siam.
H. Leschenaultii, *D. and B.*, Madras.
H. punctatus, *Jerdon*, Tellicherry.
H. coctæi, *D. and B.*, Penang, Bombay, Ceylon.
H. leirus Berdmorrelli, *Blyth*, Mergui.
Peripia Peronii, *D. and B.*, Penang, Ceylon.
P. Cantoris, *Gthr.*, Penang.
Nycteridium Schneideri, *Shaw*, Ceylon, Bengal, Assam, Siam, Penang.

Phelsuma Andamanense, *Blyth*, Andaman Islands.
Gymnodactylus triedrus, *Gthr.*, Ceylon.
G. pulchellus, *Gray*, Penang, Singapore.
G. frenatus, *Gthr.*, Ceylon.
G. Kandianus, *Kelaart*, Ceylon.
G. Mysoriensis, *Jerdon*, Bangalore.
G. Indicus, *Gray*, Neilgherries.
G. Malabaricus, *Jerdon*, Malabar.
G. littoralis, *Jerdon*, Malabar.
G. Dekhanensis, *Gthr.*, Dekhan.
G. variegatus, *Blyth*, Moulmein.
G. nautinus fasciolatus, *Blyth*, Subathu.
Pentadactylus Borneensis, *Gthr.*, Borneo.
P. felinus, *Gthr.*, Singapore.
P. Duvaucelii, *D. and B.*, Bengal.
Puellula rubida, *Blyth*, Andaman Islands.*
Eublepharis Hardwickii, *Gray*, Peninsula of India.

REPTILES.

IX. Agamæ—Agamidæ.

- Draco volans*, *L.*, Penang, Singapore.
D. reticulatus, *Gthr.*, Philippine Islands.
D. timorensis, *Kuhl*, Timor.
D. cornutus, *Gthr.*, Borneo.
D. sumbriatus, *Kuhl*, Java.
D. maculatus, *Gray*, Siam, Penang, Tenasserim.
D. spilopterus, *Wieg.*, Manila.
D. dussumieri, *D. and B.*, Peninsula of India.
D. quinquefasciatus, *Gray*, Penang.
D. tanipterus, *Gthr.*, Siam, Tenasserim.
D. hæmatopogon, *Boie*, Java.
D. bimaculatus, *Gthr.*, Philippine Islands.
D. lineatus, *Daud.*, Amboyna, Celebes.
D. rostratus, *Gthr.*, Borneo?
Otocryptis bivittata, *Wieg.*, Ceylon.
Lyriocephalus scutatus, *L.*, Ceylon.
Ceratophora Stoddartii, *Gray*, Ceylon.
C. Tennentii, *Gthr.*, Ceylon.
C. aspera, *Gthr.*, Ceylon.
Cophotis Ceylanica, *Peters*, Ceylon.
Japalura variegata, *Gray*, Sikkim.
J. Swinhonis, *Gray*, Formosa.
J. polygonata, *Hallowell*, Loo-Choo.
Sitana Pondiceriana, *Cuv.*, Western India.
S. minor, *Gthr.*, Madras, Ceylon.
Dilophyrus grandis, *Gray*, Rangoon.
Bronchocela cristatella, *Kuhl*, Malay Peninsula.
B. smaragdina, *Gthr.*, Cambodia.
B. jubata, *D. and B.*, Pondicherry.
Calotes varicolor, *Daud.*, Ceylon, continent of India.
C. nemoricola, *Jerdon*, Neilgherries.
C. mystaceus, *D. and B.*, Pegu, Siam, Mergui, Ceylon.
C. Rouxii, *D. and B.*
C. ophiomachus, *Merr.*, Ceylon, Southern India.
C. platyceps, *Blyth*, Cherra Punji.
C. nigrilabris, *Peters*, Ceylon.
C. emma, *Gray*, Mergui.
C. maria, *Gray*, Himalayas.
Ialea Horsfieldii, *Gray*, Neilgherries, Ceylon.
Ricocalotes minor, *Gray*, Himalayas.
Acanthosaura armata, *Gray*, Eastern India.
A. capra, *Gthr.*, Chartaboum.
A. coronata, *Gthr.*, Chartaboum.
A. triotiaris, *Elliott*, *Gthr.*, Sikkim.
Varis tiara subcristata, *Blyth*, Port Blair.
'Hysignathus Cochinchinensis, *Cuv.*, Cochinchina.
'mentager, *Gthr.*, Chartaboum.
'olepis guttatus, *Cuv.*, Eastern India, China.
Iromastix Hardwickii, *Gray*, Hindustan.
'harasia dorsalis, *Gray*, Southern India.
tollio tuberculatus, *Gray*, N. Hindustan, Himalaya.
'rapelus megalonyx, *Gthr.*, Afghanistan.
'hrynocephalus Tickellii, *Gray*, Afghanistan.
'caudivolvulus, *Pall.*, Tibet.
'brachysaura ornata, *Blyth*, Sagur.

FAMILY OF CHAMELEONS—CHAMELEONIDÆ.

hamæleo vulgaris, *Daud.*, Pen. of India, Ceylon.

THE ORDER OF SNAKES—OPHIDIA.

First Sub-order. Innocuous Snakes.

I. Blind Snakes—Typhlopidae.

- typhlina lineata*, *Boie*, Penang, Hong Kong.
typhlops nigro-albus, *D. and B.*, Penang, Singapore.
'Horsfieldii, *Gray*, Khasya, Assam, Tenasserim, Cochinchina.
'bothriorhynchus, *Gthr.*, Penang.
'striolatus, *Peters*, Bengal.
Siemensia, *Gthr.*, Siam.
Braminus, *Daud.*, Indian Continent, Ceylon.
pammeces (tenuis), *Gthr.*, Madras.
mirus, *Jan.*, Ceylon.
tychocephalus acutus, *D. and B.*, Pen. of India.

II. Short-tails—Tortricidae.

- androphis rufus*, *Laur.*, Cambodia, Singapore, Tranquebar.
maculatus, *L.*, Ceylon.

III. Xenopeltides—Xenopeltidae.

- xenopeltis unicolor*, *Reinw.*, Malay Peninsula, Cambodia.

IV. Rough-tails—Uropeltidae.

- inophis oxyrhynchus*, *Schneid.*, Ceylon.

REPTILES.

R. punctatus, Mull., Ceylon.

- R. Philippinus*, *Cuv.*, Ceylon.
R. Trevelyanus, *Kelaart*, Ceylon.
R. sanguineus, *Beddome*, Wynad.
R. Blythii, *Kelaart*, Ceylon.
R. Pulneyensis, *Beddome*, Pulney Hills.
Uropeltis grandis, *Kelaart*, Ceylon.
Silybura macrolepis, *Peters*, Peninsula of India.
S. Beddomii, *Gthr.*, Peninsula of India.
S. ocellata, *Beddome*, Neilgherries.
S. Elliotti, *Gray*, Madras, Dekkan.
S. bicatenata, *Gthr.*, Dekkan.
S. Shortii, *Beddome*, Shevaroy Hills.
S. brevis, *Gthr.*, Animallay Hills, Neilgherries.
Plectrurus Perrotetii, *D. and B.*, Madras, Neilgherries.
P. Guntheri, *Beddome*, Neilgherries.
Melanophidium Wynadenae, *Beddome*, Wynad.

V. Dwarf Snakes—Calamariidae.

- Calamaria Siamesis*, *Gthr.*, Siam, Cochinchina.
C. quadrimaculata, *D. and B.*, Java.
C. albiventer, *Gray*, Penang.
C. nigro-alba, *Gthr.*, Penang.
C. leucocephala, *D. and B.*
C. catenata, *Blyth*, Assam.
C. reticulata, *Blyth*, Assam.
Macrocalamus lateralis, *Gthr.*
Oxycaulus longiceps, *Cantor*, Penang.
Geophis microcephalus, *Gthr.*, Madras.
G. (Platypteryx Perrotetii), *D. and B.*, Neilgherries.
Aspidura brachyrrhos, *Boie*, Ceylon.
A. Copii, *Gthr.*
A. trachypocota, *Cope*, Ceylon.
Haploecerus Ceylonensis, *Gthr.*, Ceylon.

VI. Oligodontes—Oligodontidae.

- Oligodon subgriseus*, Peninsula of India.
O. spilodontus, *Gthr.*, Madras.
O. Elliotti, *Gthr.*, Madras.
O. subpunctatus, *D. and B.*, Malabar coast.
O. spinipunctatus, *Jan.*
O. fasciatus, *Gthr.*, Dekkan.
O. sublineatus, Ceylon.
O. affinis, *Gthr.*, Animallay Hills.
O. Templetonii, *Gthr.*, Ceylon.
O. modestus, *Gthr.*
O. dorsalis, *Gray*, Afghanistan?
O. brevicauda, *Gthr.*, Animallay Hills.
Simotes venustus, *Jerdon*, Peninsula of India.
S. Russellii, *Daud.*, Ceylon, Pen. of India, Himalayas.
S. binotatus, *D. and B.*, Peninsula of India.
S. albiventer, *Gthr.*, Ceylon.
S. signatus, *Gthr.*, Singapore.
S. cinereus, *Gthr.*, Cambodia.
S. Swinhonis, *Gthr.*, Amoy.
S. taniatus, *Gthr.*, Cambodia, Bangkok.
S. trilineatus, *D. and B.*
S. punctulatus, *Gray*, Himalayas.
S. Labuanensis, *Gthr.*, Borneo.
S. bicatenatus, *Gthr.*
S. albocinctus, *Cantor*, Assam.
S. fasciolatus, *Gthr.*, Pachebone.
S. Cochinchinensis, *Gthr.*, Lao Mountains.
S. trinotatus, *D. and B.*, Penang, China.

VII. Colubridæ—Colubridæ.

- Ablabes balioidirus*, *Boie*, Penang.
A. tenuiceps, *Blyth*, Nepal, Darjiling.
A. fuscus, *Blyth*, Himalayas.
A. Rappii, *Gthr.*, Himalayas.
A. bicolor, *Blyth*, Khasya.
A. olivaceus, *Beddome*, Neilgherries.
A. sagittarius, *Cantor*, Penang, Bengal, Himalayas.
A. Humberti, *Jan.*, Madras, Ceylon.
A. collaris, *Gray*, Khasya, Nepal.
A. melanocephalus, *Gray*, Malacca.
Cyclophis major, *Gthr.*, China.
C. frenatus, *Gthr.*, Afghanistan.
C. calamaria, *Gthr.*, Ceylon, Peninsula of India.
C. nasalis, *Gthr.*
C. monticola, *Cantor*, Assam.
Odontomus nympha, *Daud.*, Vellore.
O. semifasciatus, *Gthr.*
O. gracilis, *Gthr.*, Madras Presidency.
Nymphophidium maculatum, *Gthr.*
Elachistodon Westermanni, *Reinh.*

- Coronella orientalis*, *Gthr.*
Coluber rufodoratus, *Cantor*, China.
C. mandarinus, *Cantor*, Chusan.
C. porphyraeus, *Cantor*, Khasiya, Assam.
Elaphis dione, *Pall.*, Northern China.
E. sauromates, *Pall.*, Ningpo.
E. taeniurus, *Cope*, China, Siam.
Comptosoma radiatum, *Reinw.*, Eastern India.
O. melanurum, *Schleg.*, Bengal, China.
O. reticulare, *Cantor*, Himalayas, Assam.
C. Hodgsonii, *Gthr.*, Himalayas.
Cynophis Helena, *Daud.*, Ceylon, Madras.
O. Malabaricus, *Jerdon*, Peninsula of India.
Ptyas mucosus, *L.*, all over the continent, Ceylon.
P. korros, *Reinw.*, Eastern India.
Xenelaphis hexahonotus, *Cantor*, Arakan, Penang, Singapore.
Zamenis diadema, *Schleg.*, Afghanistan, Sind.
Z. ventrimaculatus, *Gray*, Western India.
Z. gracilis, *Gthr.*, Dekhan, Sind.
Z. fasciolatus, *Shaw*, Peninsula of India, Bengal, Province Wellesley.
Zaocys fuscus, *Gthr.*, Borneo.
Z. carinatus, *Gthr.*, Borneo.
Z. dhumnades, *Cantor*, Chusan, Ningpo.
Z. nigromarginatus, *Blyth*, Himalayas.
Herpetodryas Sieboldii, *Gthr.*, Sikkim.
Tropidonotus quincunciatus, *Schleg.*, all over India.
T. annularis, *Hallowell*, China.
T. trianguligerus, *Reinw.*, Penang.
T. macrophthalmus, *Gthr.*, Himalayas.
T. dorsalis, *Gthr.*, Chikiang.
T. macrops, *Blyth*, Darjiling.
T. platyceps, *Blyth*, Himalayas.
T. subminiatus, *Reinw.*, Eastern India.
T. Himalayanus, *Gthr.*, Himalayas.
T. angusticeps, *Blyth*, Assam, Arakan.
T. stolidus, *L.*, all over the Indian continent.
T. monticola, *Jerdon*, Animallay Hills.
T. junceus, *Cantor*, Penang, Chikiang.
T. Ceylonensis, *Gthr.*, Ceylon.
T. Reddombii, *Gthr.*, Neilgherries.
T. nigrocinctus, *Blyth*, Pegu? Tenasserim.
T. flavipunctatus, *Hallowell*, Hong-Kong.
T. zebrinus, *Blyth*, Mergui.
T. tigrinus, *Boie*, Northern China.
T. leucomelas, *Gthr.*, Penang.
T. plumbicolor, *Cantor*, Madras Presidency.
Aetionotus schistosum, *Daud.*, Ceylon, Malay Penin.
Xenochrophis cerasogaster, *Cantor*, Malay Peninsula, Bengal, Assam, Khasiya.
Prymnomiodon chalcus, *Cope*, Siam.
- VIII. Fresh-water Snakes—Homalopsidae.
Fordonia unicolor, *Gray*, Penang.
Cantorio elongata, *Gthr.*, Singapore.
Cerberus rhynchops, *Schneid.*, from Ceylon to Siam.
Hypsihrina plumbea, *Boie*, Eastern India.
H. enhydria, *Schneid.*, Bengal, Eastern India.
H. Jagorii, *Peters*, Siam.
H. Bennetti, *Gray*, China.
H. Chinensis, *Gray*, China.
Ferania Sieboldii, *Schleg.*, Bengal, Province Wellesley.
Homalopsis buccata, *L.*, Malay Peninsula, Cambodia.
Hipistes hydrinus, *Cant.*, Penang.
Herpeton tentaculatum, *Lacep.*, Siam.
- IX. Desert Snakes—Psammophidae.
Psammophis condanarus, *Merr.*, Peninsula of Indian.
Psammodynastes pulverulentus, *Boie*, Eastern India.
- X. Tree Snakes—Dendrophidae.
Gonyosoma oxycephalum, *Boie*, Penang, Tenasserim.
G. gramineum, *Gthr.*, Khasiya.
G. fraenatum, *Gray*, Khasiya.
Phyllorhis carinata, *Gthr.*, China.
Dendrophis picta, *Gm.*, all over India.
D. caudolineata, *Gray*, Penang, Singapore.
Chrysopolea ornata, *Shaw*, all over India.
C. rubescens, *Gray*.
- XI. Whip Snakes—Dryophidae.
Tropidococcyx Perrotetii, *D. and B.*, North Canara.
Tragopsis prasinus, *Reinw.*, Eastern India.
T. dispar, *Gthr.*, Animallay mountains.
T. frontocinctus, *Gthr.*

- Passerita mycterizans*, *L.*, Ceylon, Peninsula of India.
P. purpurascens, *Gthr.*, Ceylon.
- XII. Dipsades—Dipsadidae.
Dipsas cynodon, *Cuv.*, Malay Peninsula.
D. Forsteni, *D. and B.*, Animallay mountains.
D. boops, *Gthr.*, Bengal.
D. dendrophila, *Reinw.*, Malay Peninsula.
D. bubalina, *Klein.*, Assam, China?
D. multimaculata, *Schleg.*, Bengal, Eastern India.
D. trigonata, *Schneid.*, Peninsula of India, Bengal.
D. multifasciata, *Blyth*, Subathu.
D. gokool, *Gray*, Penang, Bengal.
D. Ceylonensis, *Gthr.*, Ceylon.
- XIII. Lycopodotes—Lycodontidae.
Lycodon aulicus, *L.*, Ceylon and continent of India.
L. Laosensis, *Gthr.*, Cochinchina.
L. striatus, *Shaw*, Peninsula of India.
L. Animallensis, *Gthr.*, Animallay mountains.
L. rufozonatus, *Cant.*, Chusan.
Tetragnosoma effrene, *Cant.*, Penang.
T. atropurpureum, *Cant.*, Mergui.
Leptorhiza jara, *Shaw*, Pen. of India, Bengal, Assam.
Ophites subcinctus, *Boie*, Penang.
O. albobuscus, *D. and B.*, coast of Malabar.
Cercaspius carinata, *Kuhl*, Ceylon.
- XIV. Blunt-heads—Amblycephalidae.
Amblycephalus boa, *Kuhl*, Penang.
Paras carinata, *Reinw.*, Cochinchina.
P. monticola, *Cant.*, Assam.
P. lavis, *Kuhl*, Cochinchina, Khasiya.
- XV. Rock Snakes—Pythonidae.
Python reticulatus, *Schneid.*, Malay Peninsula.
P. molurus, *L.*, Peninsula of India, Bengal, Nepal.
- XVI. Sand Snakes—Erycidae.
Gongylorhis conicus, *Schneid.*, Pen. of India, Sikkim.
Cursoria elegans, *Gray*, Afghanistan.
Eryx Johnii, *Russell*, Pen. of India, Panjab, Sikkim.
- XVII. Wart Snakes—Acrochordidae.
Acrochordus Javanicus, *Hornst.*, Penang, Singapore.
Chersydryus granulatus, *Schneid.*, eastern coasts of S. India, Malay Peninsula.
- Second Sub-order. Venomous Colubrine Snakes.
- I. Terrestrial—Elapidae.
Naja tripudians, *Merr.*, over nearly entire India.
Ophiophagus elaps, *Schleg.*, over nearly entire India.
Bungarus caeruleus, *Schneid.*, Peninsula of India, Bengal, Assam.
B. fasciatus, *Schneid.*, continent of India.
B. Ceylonicus, *Gthr.*, Ceylon.
B. semifasciatus, *Kuhl.*, China, Formosa.
Xenurclaps bungaroides, *Cantor*, Assam.
Magerorhis flaviceps, *Reinh.*, Penang.
Callophis bivirgatus, *Boie*, Malay Peninsula.
C. intestinalis, *Laur.*, Malay Peninsula.
C. gracilis, *Gray*, Panang and Singapore.
C. Maclellandii, *Reinh.*, Himalayas, Nepal, Assam.
C. annularis, *Gthr.*
C. trimaculatus, *Daud.*, Tenasserim, Bengal.
C. maculiceps, *Gthr.*, Malay Peninsula.
C. nigrescens, *Gthr.*, Neilgherries.
- II. Sea Snakes—Hydrophidae.
Platurus scutatus, *Laur.*, Indian Ocean, Pacific.
P. Fischeri, *Jan.*, Indian Ocean.
Aipysurus anguilliformis, *Schmidt*, Australia seas.
A. levis, *Lacep.*, Northern Australia.
A. fuscus, *Tschudi*, Australia.
Disteria doliata, *Lacep.*
Acalyptus superciliosus, *D. and B.*, S.W. Pacific.
Hydrophis Jerdonii, *Gray*, Madras, Penang.
H. Stokesii, *Gray*, Northern Australia.
H. major, *Shaw*, Indian Ocean.
H. robusta, *Gthr.*, Indian Ocean.
H. Belcheri, *Gray*, New Guinea.
H. caeruleus, *Shaw*, Indian Ocean.
H. aspera, *Gray*, Singapore.
H. spiralis, *Shaw*, Indian Ocean.
H. cyanocincta, *Daud.*, Indian Ocean.
H. melanocoma, *Gthr.*
H. subcincta, *Gray*, Indian Ocean.

REPTILES.

H. nigrocincta, *Daud.*, Bengal.
H. elegans, *Gray*, Australia.
H. torquata, *Gthr.*, Penang.
H. chloris, *Daud.*, Madras, Bengal, Penang.
H. lindseyi, *Gray*, China, Siam, Malabar.
H. atriceps, *Gthr.*, Siam.
H. latifasciata, *Gthr.*, Mergui.
H. coronata, *Gthr.*, Bengal.
H. diadema, *Gthr.*
H. gracilis, *Shaw*, Madras, Java.
H. fasciata, *Schneid.*, Vizagapatam.
H. Cantoris, *Gthr.*, Penang.
H. lapemoides, *Gray*, Ceylon, Madras.
H. longiceps, *Gthr.*, Indian Ocean.
H. stricticollis, *Gthr.*, Indian Ocean.
H. ornata, *Gray*, Indian Ocean.
H. Ellioti, *Gthr.*, Siam, Madras, Ceylon.
H. pachycercus, *Fisch.*, East Indian Archipelago.
H. viperina, *Schmidt*, Madras, Java.
H. ocellata, *Gray*, Australia.
H. anomala, *Schmidt*, Samarang.
H. curta, *Shaw*, Madras.
H. Hardwickii, *Gray*, Penang.
H. loreata, *Gray*, Borneo, Philippines.
Enhydryna Bengalensis, *Gray*, Indian Ocean.
Pelamias bicolor, *Schneid.*, Indian and Pacific Ocean.

Third Sub-order. Viperine Snakes.

I. Pit Vipers—Crotalidæ.

Trimeresurus gramineus, *Shaw*, E. parts of continent.
T. erythrurus, *Cant.*, China, Bengal, Siam, Java.
T. carinatus, *Gray*, Sikkim, Bengal, Rangoon.
T. purpuraceus, *Gray*, Penang, Singapore.
P. animallensis, *Gthr.*, Animallay Hills.
T. monticola, *Gthr.*, Nepal, Sikkim.
T. Wagleri, *Schleg.*, Malay Peninsula.
T. strigatus, *Gray*, Neilgherries, Dekhan.
T. trigonocephalus, *Merr.*, Ceylon.
T. mucroscqualus, *Cant.*, Assam.
Peltepor macrolepis, *Beddome*, Animallay Hills.
Calloselasma rhodostoma, *Reinw.*, Siam.
Halys Blomhoffii, *Boie*, Japan, Formosa.
H. Pallasii, *Gthr.*, Tartary.
H. Himalayanus, *Gthr.*, Tibet.
H. Ellioti, *Jerdon*, Neigherries.
Hypnale nepa, *Laur.*, Ceylon, Southern India.

II. Vipers—Viperidæ.

Daboia Russellii, *Shaw*, Ceylon, S. India, Himalayas.
Echis carinata, *Schneid.*, Southern India.

SECOND SUB-CLASS—BATRACHIANS.

THE ORDER OF TAILLESS BATRACHIANS—BATRACHIA SALIENTA.

Oxyglossus lima, *Tschudi*, Siam, Cambodia, China.
Dicroglossus Adolphi, *Gthr.*, Himalayas.
Rana Kuhlii, *Schleg.*, Ceylon, Ningpo.
R. hexadactyla, *Less.*, Ceylon, Madras.
R. cyanophlyctis, *Schneid.*, Ceylon, Southern India, Lower Bengal.
R. tigrina, *Daud.*, Sikkim, Nepal.
R. Liebigii, *Gthr.*, all over India.
R. esculenta, *L.*, China.
R. sylvatica, *Leconte*, Ningpo.
R. gracilis, *Wieg.*, from Madras to Southern China.
Hoplobatrachus Ceylanicus, *Peters*, Ceylon.
Ptychocephalus brevipes, *Schneid.*, S. India, Himalayas.
P. rufescens, *Jerdon*, coast of Malabar.
Megalophrys montana, *Kuhl*, Penang, Ceylon.
Xenophrys monticola, *Gthr.*, Khasia, Sikkim.
Cacopus systoma, *Schneid.*, Carnatic.
C. globulosus, *Gthr.*, Russelconda.
Diploleisma ornatum, *D. and B.*, S. India, Ceylon.
D. pulchrum, *Hollow.*, Siam, China.
Bufo vulgaris, *Laur.*, China, Himalayas.
B. calami, *a. Laur.*, Tibet.
B. Kelaartii, *Gthr.*, Southern Ceylon.
B. galeatus, *Gthr.*, Cambodia.
B. melanostictus, *Schneid.*, all over India.
B. asper, *Schleg.*, Mergui.
Hylarana macrodactyla, *Gthr.*, Hong-Kong.
H. erythraea, *Schleg.*, Malay Penin., south coast of Siam.
H. macularia, *Blyth*, Ceylon.
H. Malabarica, *D. and B.*, coast of Malabar.
H. temporalis, *Gthr.*, Ceylon.

REPTILES.

Polypodates maculatus, *Gray*, all over the continent of India and Ceylon.

P. quadrilineatus, *Wieg.*, Penang, Singapore.
P. microtypanum, *Gthr.*, Ceylon.
P. pleurostictus, *Gthr.*, Madras Presidency.
P. reticulatus, *Gthr.*, Ceylon.
P. eques, *Gthr.*, Ceylon.
P. Afghana, *Gthr.*, Afghanistan.
Ixalus variabilis, *Gthr.*, Ceylon.
I. temporalis, *Gthr.*, Ceylon.
I. femoralis, *Gthr.*, Ceylon.
I. leucorhinus, *Martens*, Ceylon.
I. schinardanus, *Kelaart*, Ceylon.
Rhacophorus maximus, *Gthr.*, Nepal, Sikkim, Afghanistan.
Hyla Chinensis, *Gthr.*, Southern China, Formosa.
Callula pulchra, *Gray*, Ceylon, Eastern India, China.
C. obscura, *Gray*, Ceylon.
Combimator Sikkimensis, *Blyth*, Sikkim.

THE ORDER OF TAILED BATRACHIANS—BATRACHIA GRADIENTIA.

Cynops Chinensis, *Gray*, Ningpo.
Plethodon persimilis, *Gray*, Siam.

THE ORDER OF BURROWING BATRACHIANS—BATRACHIA APODA.

Epicrion glutinosum, *L.*, Ceylon, Southern India, Khasia, Siam, Tenasserim.
E. monochroum, *Blyth*, Singapore.
Cœcilia oxyura, *D. and B.*, Malabar coast.

The reptiles of Southern and Eastern Asia have been described by Dr. Gunther in a volume published by the Ray Society, from information obtained from the museums in London, and from drawings and descriptions by Sir W. Elliot, Mr. B. H. Hodgson, Sir A. Smith, Sir J. E. Tennent, Captain Beddome, and Mr. L. S. Dillwyn; and the labours of Mr. Blyth, Drs. Jerdon, Kelaart, Cantor, Mason, Hooker, Shortt, Ewart, and Sir Joseph Fayrer have also been great. Notices will be given here of the more important species.

Reptiles are oviparous or ovo-viviparous vertebrate animals, with red, cold blood, with three cavities of the heart, breathing by lungs either during the whole period, or at least in the later stages of their growth. They are naked; but frequently the skin shows scale-like folds, or is tubercular, or forms osseous scutes.

The first sub-class, or Reptilia proper, have only one ventricle of the heart, incompletely divided; two atria; never possessing branchiæ at any period of life. One occipital condyle. Skin with scale-like folds, or tubercular, or forming osseous scutes. This sub-class comprises the order of tortoises (Chelonina), that of the lizards (Sauria), and that of the snakes (Ophidia).

The order of tortoises, or Chelonina, are reptiles with the bones of the thorax united into a carapace. The family Testudinidæ are the land tortoises, but only one species, *Testudo elegans*, the starred tortoise, occurs in India.

Emys, the Pond Tortoises, Terrapens, a genus of the Emydidæ, or fresh-water tortoises. The species of this genus inhabit all the temperate and tropical regions, except Australia. Formerly (between the latest geological and the historical periods) the genus had even a still greater geographical range than now, a species in a semi-fossil state being found in England and in other European countries, where it is extinct at present. The species undergo great changes in external appearance with age. The Terrapens abound in still waters and tanks in the southern parts of India; perfectly motionless, they rest on the

water, with the shell and the snout raised above its surface, suddenly disappearing at the approach of danger, and darting away with the swiftness of a fish. Their pointed claws enable them to crawl easily over slippery and steep places, and to dig little holes for a small number of elongate ovate, hard-shelled eggs, which in some species require as long a period as from 18 to 20 months before they are hatched. They are chiefly carnivorous, and the flatter the shell, the broader the interdigital web, the more denticulated the jaws, the more aquatic and carnivorous are the habits of the pond tortoises. The food of the carnivorous species consists of water insects, frogs, small fishes, small aquatic birds, and mammals; whilst, on the other hand, they are persecuted by crocodiles and large fishes, and the young and eggs are eaten by numerous other animals. They are not used as food by man, the flesh of most species having a very disagreeable smell, which is also perceptible when first taken out of the water in a net or by a hook baited with meat. Pegu, Sitang, Schwe Gyn, Tenasserim. $7\frac{1}{2}$ inches long.

Batagur baska, the Batagur, another of the Emydidae of India, is found in the Ganges and Irawadi, abounds at the mouth of the Hoogly; great numbers are brought to Calcutta, where they are eaten by particular castes, and are even kept for sale in tanks. Dr. Cantor caught one in the sea off Penang, with a small hook baited with a shrimp.

Emyda Ceylonensis, Gray, *Shield, Rept.* p. 64, tab. 29 A., is one of the Trionycidae, or freshwater turtles. Generally distributed in the lower parts of Ceylon, found in lakes and tanks. Several were kept alive for months in a tub filled with fresh water, fed freely on animal food, and also on bread and boiled rice. A large female laid three eggs, globular, about 1 inch in diameter, with a hard calcareous shell. This and Emys trijuga are put into the wells to act the part of a scavenger. Shell, in fresh specimens, smooth; in drying, the granular surface of the bony shell is apparent.

Trionyx Gangeticus, *Cuv., Règne Anim.*, is found in the Ganges and its tributaries, upwards to Nepal; at Penang, in rivers and on the sea-coast. It is of fierce habits, defending itself desperately by biting, and emitting, when excited, a low, hoarse, cackling sound. It appears to be far less numerous at Penang than T. Javanicus and Chitra Indica. Shell 23 inches long.

The great Seychelles tortoise is misnamed Tr. Indica by Gmelin, but under that name Mr. Gray unites no fewer than seven of the supposed species admitted by MM. Dumeril and Bibron. According to Dr. Schlegel, the Indian tortoise, probably indigenous to Madagascar and the neighbouring isles, has been acclimated in the Gallapagos Isles, in California, and on several other points on the western coast of South America. But Blyth had been assured, on good authority, that numerous specimens kept in gardens in the Mauritius, have all been brought from the Seychelles Islands in the first instance, that they are still commonly brought from those islands to the Mauritius, and thence we believe the few in India have been imported. The largest seen in India measures 4 feet 4 inches in length over the curve of the carapace, or 3 feet 5 inches in a straight line; transversely 4 feet 2 inches over the high arch of carapace, or in a diameter line 2 feet 2 inches high;

when not raised upon the legs, i.e. height of shell, $20\frac{1}{2}$ inches; when walking, the shell is lifted fully 6 inches from the ground, if not more; circumference of hind foot, $17\frac{1}{2}$ inches.

Chitra Indica, Gray, *Shield, Rept.* p. 70. Grows to a very large size, and, like the Trionyx, is eaten by the natives of S. Asia, particularly the Chinese. Found in the Ganges and in its tributaries, upwards into Nepal; frequent in the estuaries of the Malayan Peninsula, and said to be found in the Philippine Islands. Specimens weigh 240 pounds; they are very powerful, and of ferocious habits. Shell measures 37 inches.

The fourth family, or Chelonidae, are Marine Turtles. Marine turtles are at once distinguished by long, compressed, fin-shaped, non-retractile feet, the toes being enclosed in a common skin, out of which only one or two claws project. The carapace is broad and much depressed, so that when these animals are on shore and are turned over on their backs, they cannot regain their natural position. They are thoroughly marine animals; their pinnate feet and their light shells render them the best swimmers in the class of reptiles; they sometimes live hundreds of miles distant from shore, to which they periodically return, in order to deposit from 100 to 250 soft-shelled eggs, which are buried in the sand. The food of some species consists exclusively of algæ; others subsist upon fish and mollusca. They are found in all the intertropical seas; sometimes they travel far into the temperate regions. The flesh and eggs of all the species are edible, although the Indian turtles are much less appreciated in this respect than those of the Atlantic. At certain seasons, the flesh of Chelonia virgata acquires poisonous qualities, and instances of death have been ascribed to its use.

Caouana, Gray, has 15 vertebral and costal shields, which are thin and not imbricate. The genus is carnivorous, eating fishes, mollusca, and crustacea; comprises an Atlantic species, the loggerhead, which does not appear to extend into the Indian Ocean; and C. olivacea, confined to the East Indies.

Caouana olivacea, Indian loggerhead. This species is distinguished from its Atlantic congener by the presence of only a single small claw to each of its feet. It is abundant at the mouth of the Hoogly, found in the Bay of Bengal, on the coasts of Malabar and Penang, and in the seas of the Philippine Islands and of China. Its flesh, though relished by the Chinese, is unpalatable to Europeans.

Chelonia, *Flem., Gray, Shield, Rept.* p. 74. Herbivorous, feeding on algæ. Species of Chelonia extend over nearly all the seas between the tropics. Ch. maculosa occurs on the Malabar coast.

Chelonia virgata, the Indian turtle or green turtle, is found on all the coasts of the East Indies. It is at all seasons plentifully taken in fishing-stakes in the Straits of Malacca; in size it equals the Atlantic turtle, which it rivals in flavour. About December and January the female lands to deposit her eggs in the sandy beach of some sequestered island, and then the fishermen watch during the moonlight nights to 'turn turtles.' The eggs are of a spherical shape, about 1 inch in diameter, covered by a soft semi-transparent membrane of a pale-yellow colour. The

expert eye of the fisherman baffles the pains with which the turtle conceals her eggs, and prodigious numbers are disinterred. They are very rich-flavoured, like marrow, and will keep for weeks although exposed to the air. The flesh of this species is sometimes found to be poisonous.

Caretta squamata, hawk-bill turtle, or caret. The hawk-bill turtle, so named from its rather elongated and compressed, curved upper jaw, does not attain to the same size as the other turtles; a shell 2 feet long is considered as extraordinarily large. It is found throughout the Eastern Archipelago, is plentiful only on parts of the coasts of Ceylon (Hambantotte, Matura), of the Maldives, of Celebes, etc. As, however, turtles always resort to the locality where they were born, or where they have resorted to propagate their kind, and as their capture is very profitable, they become scarcer and scarcer at places where they are known to have been abundant formerly. Some specimens sell in Ceylon for as much as £4, the price depending on the quality of the shell. If taken from the animal when decomposition has set in, the colour of the shell becomes clouded and milky, and hence the cruel expedient is resorted to of suspending the turtle over fire till heat makes the shields start from the bony part of the carapace, after which the creature is permitted to escape to the water, where they live; but reproduction of the epidermal shields to a great extent is improbable. At Celebes, whence the finest tortoise-shell is exported to China, the natives kill the turtle by blows on the head, and immerse the shell in boiling water to detach the plates; dry heat is only resorted to by the unskilful.

Dermatochelys coriacea. This turtle, although scarce, appears to be spread throughout almost all the seas of the tropical and temperate regions, having been found in the Mediterranean, on the south coast of England, in the West Indies, at the Cape of Good Hope, on the coasts of the United States, in Chili, in Japan, and in India. A female was caught on the coast of Tenasserim, of entire length 6 feet 2½ inches.

In the *Sauria*, or order of lizards, the integuments are with scale-like folds, or osseous scutes, or granular. The greater portion of the saurians are easily distinguished from the other orders of reptiles by their elongate form, by their moveable thorax covered with skin, by the presence of legs, and by their general integuments, which are either folded into scales, or granular, or tubercular, or shielded. Still there are many saurians which at a superficial glance might easily be taken for members of the order of snakes, and there is a gradual transition between both these orders. Many lizards have several layers of cells loaded with several pigments; the animal spreads or compresses these layers by more or less inflating its lungs, whereby the changes in the coloration are effected. Saurians are oviparous; a few ovo-viviparous. They have been divided by naturalists into many families.

The first family comprise the *Crocodyles*, or *Crocodylidae*. Fresh-water saurians are found between the tropics wherever the country is watered by sufficiently large rivers or lakes. The most conspicuous characters of the crocodiles refer to their thoroughly aquatic life; but these characters are

combined with an extremely powerful development of those organs which render the crocodiles the most formidable of all the carnivorous fresh-water animals. The back, the tail, and the belly are protected by a dermal armour composed of quadrangular shields, which are arranged in regular longitudinal and transverse series. A considerable proportion of the food of the crocodile is fish, the proverbial swiftness of which is of little avail when pursued by these reptiles. They fall an easy prey, especially to the young animals; the active old animals, requiring a greater quantity of food, attack every large animal which accidentally approaches them, and, in overpowering it, the whole of their powerful organization is called into requisition. Seizing the victim between their capacious jaws, and fastening their long, pointed, conical teeth into its flesh, they draw it, in one moment, by their weight and with a stroke of the tail, below the water, and drown it. Their gullet, however, is much too narrow to allow of the passage of the entire body of the victim; and their teeth being adapted for seizing and holding fast only, and not for biting, they are obliged to mangle the carcase, tearing off single pieces by sudden strong jerks. This is performed chiefly by lateral motions of the head and front part of the body; and the bones of the head of the crocodile are much more firmly united with one another, and the processes of the cervical vertebrae much more developed, than in any other saurian. Indian crocodiles inhabit rivers and estuaries, also the sea-coasts, and in calm weather may be seen floating at a distance of two or three miles from shore. Those inhabiting small inland waters which are dried up during a drought, are compelled to wander about in search of water, in which alone they can procure their food; they do this during the night. Some of them, however, especially large individuals, bury themselves in the mud, as many fresh-water tortoises and fish do, and remain in a state of torpor below the hard crust during the time of the drought. It is during that period shortly after they have been released from the state of an enforced fasting, that they are most formidable. A man seized by a crocodile has only one way of saving his life, if not his limb, namely, to force his fingers into the eyes of the beast, which immediately lets go its victim,—a practice equally known to the Indian of South America, to the Negro of Africa, and to the Hindu. It is not difficult to catch a single depredator by a hook baited with flesh or entrails, and made fast by a bunch of strong, thin cords, which it cannot gnaw asunder, as they sink into the spaces between the teeth. It is not easy to kill them on the spot, except by a ball sent through the eye into the brain, or through the neck to the spinal cord. Of course a severe injury to any of the vital parts will prove fatal to them, but not before days or weeks have elapsed. All the crocodiles are oviparous; the eggs have a hard shell, and resemble in size and shape those of a goose; from 20 to 60 are deposited in a hollow near the banks, and slightly covered over with mould or sand. The young crocodiles are of a rather rapid growth. One hatched at Madras in 8 years increased to the length of 8 or 9 feet, and was so powerful as to destroy a full-grown buck antelope, which had come to drink water at the tank to which it usually resorted. Alligators are

found only in the New World, but the British in India almost universally apply this name to the Indian crocodiles. Crocodiles are found in America, Africa, Asia, and Australia.

In rivers a single crocodile will often appropriate to himself a limited district, which, if it happen to be in the vicinity of a village, will soon be perceived in the loss of the grazing cattle. Instances are on record of Malays who, to avenge the loss of a relative, have watched the crocodile, and, by diving from below, plunged a kris into its heart. The eggs are white, the shell hard, of a cylindrical form, upwards of 3 inches in length, and about $1\frac{1}{2}$ inch in diameter.

Crocodiles are numerous in all the tide-water streams of Burma. During a two hours' pull up a small river, Mr. Mason once counted 14 sunning themselves on the mud banks. They often carry off the natives; and a single animal, emboldened by his successes, will usurp dominion over a particular portion of a river, where he becomes the terror of every boat's crew that passes. The steersman occupies the most dangerous position, for the crocodile's mode of attack is to glide up silently to the bow or stern of a boat, then turn suddenly, when with one stroke of his powerful tail, close to the top of the boat, he sweeps into the water whoever is within its reach, and the stunned victim becomes an easy prey. A Karen chief, with whom Mr. Mason was acquainted, perished in this way at a point in the river Gaing which had previously been known as the demesne of one of these river monarchs. Persons sleeping on their boats moored to the shore, have sometimes awoke in the jaws of these monsters, and one carried off a Burman from the back of a buffalo that he was riding across a small stream, under the very shadow of the walls of Tavoy.

Crocodilus porosus, Schn. This, the larger and fiercer of the two crocodiles, is found in various localities both on the east and west coasts of the Peninsula of India.

Gavialis Gangeticus, the gavial or nakoo. The length of the snout equals that of 9 or 10 of the dorsal shields. Old male specimens have a large cartilaginous hump on the extremity of the snout. Alian noticed that the Ganges is inhabited by crocodiles which have a horn on the end of the snout, perforated by the nostrils, and containing a small cavity for the reception of air, so that the males are enabled to remain under water for a longer time than the females. The gavial attains to a length of 20 feet. The correct term is garial.

The family of the Water Lizards are the *Varanidae*. The family contains the largest species of lizards; the greater part of them live in the neighbourhood of large rivers, and are excellent swimmers, their long, compressed tail serving as a propeller; they are carnivorous, feeding on all different water animals and on the eggs of birds, and likewise on those of other large reptiles. Their movements on land are not much less rapid than in the water. Several species climb trees; they are active during a part of the night. They are found in tropical Africa, Asia, and Australia.

Varanus Bengalensis. The Karen are extravagantly fond of their flesh; they steal up the trees with a noose at the end of a bamboo, and often noose them while leaping for the water, or catch

them in the boat, which is brought under the tree. The head of this species, the natives say, is venomous, and they discard it altogether; but the flesh of the other parts, which smells most odiously, is deemed by the Karens much preferable to fowls.

Varanus dracena, common water lizard. A most common species in all British India, Bengal, Nepal, Southern India, and Ceylon. It is called in India the Iguana, is found in great abundance in all the maritime provinces of Ceylon, rarely in the higher Kandyan districts. This species of the water lizards can climb well both trees and walls, and it is popularly believed that thieves make use of it to effect an entrance into a building or over a wall, by allowing their guana to get hold by its fore-claws of the window-sill or wall, and pulling themselves up by it. It is eaten by the natives, who consider it highly nourishing and aphrodisiac, and many Europeans use it for soup, imagining it allied to the West Indian guana. It can always be procured in the Madras market.

Varanus salvator, Laurenti. During the day it is commonly observed in the branches of trees overhanging rivers, preying upon birds and their eggs and smaller lizards, and when disturbed, it throws itself from a considerable height into the water. When attacked on level ground, it attempts its escape by running, if possible towards the water. Its quickness, however, is not so great as to prevent a man from overtaking it, when it will courageously defend itself with teeth and claws, and by strokes of the tail. The lowest castes of Hindus capture these lizards commonly by digging them out of their burrows on the banks of rivers, for the sake of their flesh, which by these people is greatly relished. Some individuals attain to nearly 7 feet in length, but the majority are smaller.

Hydrosaurus salvator, Gray, ocellated water lizard, is an inhabitant of the Archipelago, East Indian continent, China, Siam, Ceylon. It is very numerous in hilly and marshy localities of the Malayan Peninsula. It is commonly, during the day, observed in the branches of trees overhanging rivers, preying upon birds and their eggs and smaller lizards, and when disturbed it throws itself from a considerable height into the water. It will courageously defend itself with teeth and claws and by strokes of the tail. Low castes in India dig them out of their burrows on the banks of rivers, their flesh being greatly relished. Some attain to nearly 7 feet in length.

The fifth family comprises the Skinks, or *Scincidae*. The species of this family are exceedingly numerous, and inhabit almost every part of the tropical regions, some extending into the temperate zones. They are thoroughly land lizards, preferring dry ground, and hiding themselves in the sand, under stones, etc. None of them enter the water. They do not attain any considerable size.

Euprepes Chinensis. This is one of the most common and most widely-spread lizards of the East Indies. It occurs in almost every part of the continent as well as of the Archipelago, from Afghanistan to China and the Philippine Islands; it is even said to inhabit the Sandwich Islands. It is not found beyond an elevation of 8000 feet. Cantor says that it is exceedingly numerous in

the hills and valleys of the Malayan countries. They may be seen basking in the sun, in bamboo hedges, or on trees; and they fearlessly enter houses in pursuit of insects, in which they display great agility. The female deposits 6 to 12 yellowish-white, oval, cylindrical eggs, half an inch in length.

The eighth family are the Geckos, or Geckotidae. The limbs are stout, of moderate length, with at least four of the toes well developed. They are found in almost every part between and near the tropics, frequenting houses, rocks, and trees; and some of the species are so numerous around and within human dwellings, that they are most familiar objects to the inhabitants. All the Indian species, with the exception of *Eublepharis*, are able to run up and along the surface of a wall or of any other perpendicular object, the lower surface of their toes being provided with a series of moveable plates or discs, by the aid of which they adhere to the surface over which they pass. No gecko has imbricate scales on the back. The geckos do not attain to any considerable size, the largest species being from 10 to 14 inches long. They are carnivorous animals, destroying insects, moths, and even the younger and weaker members of their own species. Geckos have even been seen devouring their own tail. They are of fierce habits, fighting between themselves, particularly when one has caught a larger insect than he is able to swallow at once. They make a spring at their victim. Their greediness has developed some intellectual faculties in the house geckos; accustomed to be fed at a certain time with rice, etc., these little lizards will punctually make their appearance, and fearlessly take proffered food. Another peculiarity of the geckos is that they are endowed with voice. In *Gecko guttatus* it is a shrill cry, sounding like 'to-kee;' in *Gecko monarchus* it resembles the monosyllable 'tok,' repeated six or eight times with increased celerity; in *Hemidactylus frenatus* it is a sharp, quick call, like 'chic, chic, chit,' etc. They have several vernacular names in imitation of these sounds, as Too-kai, To-kee, Cheecha, Gokee, Keko, Gecko.

Gecko monarchus, Gray, *Lizards*, p. 161, possesses the power of changing its ground colour in a greater degree than any other gecko. It is very numerous at Penang, swarming at night in rooms. They are pugnacious among themselves, two or more sometimes fighting for an insect.

Ptychozoon homalocephalum, the flying gecko, attains to a length of 7 inches, of which the tail takes one-half. It is found chiefly in Java and in a few other islands of the Eastern Archipelago. Penang, Singapore, and the island of Rannee appear to be the only other places where it has hitherto been found in India. The expansions of the skin have the same purpose as the wings of the dragons and of the flying squirrels. In leaping, these membranes are expanded by the pressure of the air from below, and act as a parachute. When the gecko is at rest, they are kept in close contact with the body by muscles attached to their interior surface. Like other geckos, they have in some degree the power of changing the ground colour from a darker to a lighter shade.

Hemidactylus coctæi, the common gecko or

small gecko. The spider of the English Bible, Proverbs xxx. 28, was undoubtedly a small gecko represented by this species, and the word was so rendered in the Syriac version made in the 2d century, and in the Vulgate Latin made in the 4th century. Jerome translated, '*Stellio manibus nititur, Et moratur in ædibus regis,*' into

'The gecko taketh hold with her hands,
And dwelleth in kings' palaces.'

Hemidactylus frenatus is the cheecha of Ceylon. It scarcely ever exceeds the length of 4 to 5 inches, and is one of the most common house geckos; seen soon after sunset in search of prey, which consists of flies and other insects. It does not reject boiled rice and crumbs of bread, always returning to the spot where it has been thus before fed. It is also frequently met with on trees and on rocks. The female lays three or four eggs, in crevices of old walls or in the hollows of trees. This small species is of fierce habits, like several other Geckonidae, destroying its own species.

The ninth family are the Agames, or *Agamidae*. The agames are land lizards, spread over almost every part of the Old World and of Australia, being much less numerous in the temperate parts than in the tropical,—some with a compressed body, and with a long, more or less compressed tail, live on trees or bushes; whilst others, with a depressed body, and with a shorter tail, inhabit rocks or plains. The most slender and the most gaily-coloured forms belong to the former division, the heavier ones, with duller colours, to the latter. They do not attain to any considerable size, and none of the Indian species exceed a foot in length, the tail not included. The greater part are insectivorous, but many feed on vegetables (seeds, fruits, leaves), as well as on animals.

Draco, Linn., the dragons, a genus of the Agamidae, have a semicircular membrane, supported by the five or six posterior (false) ribs, which are much prolonged, forming a sort of wing or parachute on each side of the body. A vertical appendage is suspended from the middle of the throat; a smaller horizontal fold of the skin on each side of the gular appendage. The dragons are entirely confined to the East Indies; they are more numerous in the Archipelago than on the continent; they have not yet been found in Ceylon. The character by which they are at once recognised is the peculiar additional apparatus for locomotion formed by the much-prolonged five or six hind ribs, which are connected by a broad expansible fold of the skin, the whole forming a sub-semicircular wing on each side of the body. The dragons are tree lizards, and in jumping from branch to branch they are supported in the air by their expanded parachutes, which are laid backwards at the sides of the animal while it is sitting or merely running. If the hind extremities of a dragon were cut off, it would lie helpless on the ground; but it would still move with great velocity if it were merely deprived of its wings. The locomotion of the dragons is a series of leaps, and not a continuous running; they are the anoles of the Old World. The transcendent beauty of the colour of *Draco volans* baffles description. As the lizard lies in the shade along the trunk of a tree, its colours, at a distance, appear like a mixture of brown and grey, and render it scarcely distinguishable from the bark. Thus it remains,

with no signs of life, except the restless eyes, watching passing insects, which, suddenly expanding its wings, it seizes with a sometimes considerable unerring leap.

Sitana ponticeriana, Cuv. This common ground lizard is distributed over all India, but is rare in the wooded districts, frequenting the open country, field, and low copses. On the approach of danger, it runs with great rapidity, tail erect, and conceals itself in any crack in the ground or hole, or under a stone or bush. Notwithstanding its activity, it is the common prey of harriers, buzzards, hawks, and eagles.

Calotes are true tree lizards, some having the tail rather compressed at the base. *C. versicolor* is the blood-sucker. The ground colour is generally a light-brownish olive, but the lizard can change it to bright red, to black, and to a mixture of both. The bright changeable colours are peculiar to the male during the breeding season, in the months of May and June, and it then may be seen seated on a hedge or bush, with the tail and limbs black, head and neck yellow picked out with red, and the rest of the body red. This is one of the most common lizards, extending from Afghanistan over the whole continent of India to Ceylon and China; not extending into the temperate zone of the Himalaya. Ceylonese specimens are generally somewhat larger; one of them measured 16 inches, the tail taking 11 inches. It is found in hedges and trees. The name of blood-sucker, in the opinion of Kelaart, was given from the occasional reddish hue of the throat and neck.

A tenth family are Chameleons, or *Chamæleonidae*. Africa is inhabited by numerous species; they extend to the northern shores of the Mediterranean and into South-Western Asia, into Hindustan and Northern Ceylon. The inflexibility of the neck is compensated by the wonderful structure of the eyes, which are so prominent that more than one-half of the ball stands out of the head; and not only can they be moved in any direction, but each has an action independent of the other,—one eye may be looking forward, whilst an object behind the animal is examined with the other. The faculty of changing colour possessed by the chameleons, although common to numerous other lizards, has become proverbial, and is so much developed that one side may assume a colour different from that of the other. They are oviparous, depositing under leaves from ten to twelve oval eggs with calcareous shells. The species have been left together in one genus; only one species is found in British India.

Most of the Indian specimens are of a green colour, uniform, or irregularly spotted and banded with dark green or brown; whilst in African species the ground colour is greyish, olive, yellowish, or brownish. This, however, does not appear to amount to a specific difference. In the Peninsula of India and northern parts of Ceylon it attains to a length of 10 inches, the tail taking more than one-half.

The *Ophidia* comprise the order of Snakes. There is no sharp boundary line between the order of saurians and that of snakes. Certain ophidians remind us, by several characters, of the saurian type; such as the snakes forming the first four families, which are distinguished by polished, closely-adherent, rounded, sub-equal

scales, much resembling the smooth scales of some scincoids. A peculiar mobility of the jaw-bones enables snakes to extend the gape in an extraordinary degree, and to work their prey down through the collapsed pharynx. The Pythonidae and Erycidae have rudiments of hind limbs. Generally the snakes are provided with numerous teeth, which are elongate, conical, thin, and pointed like a needle, and more or less bent backwards. Non-venomous snakes' teeth are either entirely smooth, or only the last of the maxillary series is provided with a faint longitudinal groove, which is not intended to convey a poisonous saliva into a wound, as the saliva of these snakes has never been proved to be poisonous; the groove appears to increase the strength of the tooth. The poisonous snakes are armed with a long canalculated tooth in front of the upper jaw; the channel terminates in a small slit at the extremity of the tooth, and is in connection with a duct which carries the poisonous fluid from a large gland to the tooth. At the moment the snake opens its mouth to bite, these muscles compress the gland, and force its contents through the excretory duct into the channel of the venom-tooth, whence it is injected into the wound. The structure of the venom-tooth is not the same in all poisonous snakes; in some it is fixed to the maxillary bone, which is as long, or nearly as long, as in the non-venomous snakes, and generally bears one or more ordinary teeth on its hinder portion. The poisonous snakes with such a dentition have externally a more or less striking resemblance to the non-venomous serpents, and on this account they are designated as venomous colubrine snakes, forming the second sub-order of snakes (cobra, bungarum, sea-snakes, etc.). In the other venomous snakes, the third sub-order, the maxillary bone is extremely short, and does not bear any teeth except an exceedingly long fang, with a perfectly closed, externally invisible, channel in its interior. Although this tooth also is fixed to the bone, the bone itself is very mobile, so that the tooth, which is laid backwards when at rest, can be erected the moment the animal prepares to strike. This tooth, like all the other teeth, is not only occasionally lost, but appears to be shed at regular intervals. The greater part of the snakes are oviparous, the eggs having an oblong form, and a soft, leathery shell. The pythons alone incubate their eggs, whilst all the other oviparous snakes leave them to the heat of the place where they have been deposited. Other snakes (the fresh-water and poisonous species) are viviparous, the embryos being developed in the oviduct of the mother. There may be distinguished—

Burrowing snakes, living under ground, only occasionally appearing above the surface.

Ground snakes live above ground, and only occasionally climb bushes or enter the water.

Tree snakes, or species passing the greater part of their life on bushes and trees, which they climb with the greatest facility.

Fresh-water snakes, distinguished by the position of the nostrils, which are placed on the top of the snout, and by a tapering tail. They inhabit fresh waters, and are excellent swimmers and divers.

Sea-snakes, distinguished by a strongly compressed tail, and by the position of the nostrils,

which are placed as in the last group. They live in the ser. only, occasionally approaching the land, feed on marine fish, are viviparous and venomous.

Tropical India surpasses every other part of the globe in the number of ophidian forms.

The degree of danger from a bite by a poisonous snake depends but little on the species which has inflicted the wound, but rather on the bulk of the individual, on the quantity of its poison, on the temperature, and on the place of the wound. If a large blood-vessel be pierced by the fang, the poison is carried instantaneously into the mass of the blood, and sudden death is almost always the result. Although it is always possible to recognise the venomous nature of a snake from external characters only, yet this requires such a knowledge of snakes as can be attained only by a special study of them. The wound itself speaks for or against the venomous nature of a snake which has bitten. When there are numerous punctured wounds disposed in two lines, the snake is not poisonous. If the wound is on some part of the hand, arm, or foot, one or two ligatures should be made as tightly as possible at a short distance above the wound, to prevent the absorption of the poison. The ligature is left until the proper means are taken to destroy the virus in the wound, and until medicine is taken internally, or until great pain or swelling necessitate its removal. Punctured wounds should be enlarged by incisions at least as deep as the wounds, to cause a free efflux of the poisoned blood, and to facilitate its removal by sucking. The wounds should be sucked either by the patient himself or by another person whose mouth is free from any abrasion or wound; cupping-glasses answer the same purpose in cases where they can be applied. The wound should be washed with ammonia, and its vicinity rubbed with it. Cauterization with a red-hot iron, or with sulphuric acid, butter of antimony, nitrate of silver, etc., are of great advantage, if done before the virus has spread far beyond the place of the bite. Internally, ammonia should be taken in large doses,—one, two, or three wine-glasses of the eau-de-luce. Brandy may be taken at short intervals. Dr. Shortt believes that ammonia is useless, and has strong faith in liquor potassæ. To prevent a complete collapse, it is necessary to use these strong excitants, and to repeat them until the alarming symptoms are allayed. It would be a great risk in such a case to trust to the remedies of a snake-charmer.

The *Colubridæ* family comprises the greater part of the non-venomous snakes, namely, all those which do not present any striking character either in their general habit, in the shields of the head, in the dentition, or in any other part of their organization. They have numerous teeth in the jaws and on the palate, but no fangs in front or in the middle of the maxillary. Numerous species of *Coluber*, *sp.*, *Linn.*, are found in North America, Europe, and Asia; those in British India belong to the northern parts of this region, scarcely extending southwards into the tropical region.

Pyas mucosus, *Cope*, is the Indian rat snake. It is light brownish-olive, scales with darker margins, is one of the most common species on the continent and in Ceylon, and appears to occur everywhere; it is scarce in the Archipelago, as its

occurrence has been recorded in Java only; on the other hand, it is not rare in Chusan and Formosa. In the Himalaya it ascends to only 5240 feet above the level of the sea. It is a powerful snake, attaining to a length of 7 feet, the tail being one-third, or rather more. Its food consists of mammals, birds, and frogs; it frequently enters the dwellings of man, in search of mice, rats, and young fowls. It is of fierce habits, always ready to bite, and old specimens brought to Europe never become tame. Cantor says that it utters, when irritated, a peculiar *diminucendo* sound, not unlike that produced by a gently struck tuning-fork.

Tropidonotus juncicus, *Cantor*, inhabits Penang, and, like most of the Asiatic species of this genus, is of fierce habits.

Tropidonotus quincunciatus and *T. unbratus*. The former is the most widely-spread species of the East Indies, ranging from Mesopotamia into the southern parts of China, and inhabiting most of the islands of the western half of the Archipelago. It abounds near rivers and pools, feeding on frogs and fishes; it attains to a length of 3 feet, and is of fierce habits. The ground colour of the upper parts is generally greyish or brownish-olive.

Tropidonotus macrophthalmus. This species may be at once distinguished by its large eye, and by its dilatable neck, the scales of which show an arrangement very similar to that of a cobra, for which it is frequently taken. Found in Khaasya and Sikkim,—in the latter country at an elevation of 4000 feet. Attains to 39 inches, the tail measuring 7 inches.

Tropidonotus stolonatus, *Boie*, *Isis*. This is perhaps the most common species of snake on the East Indian continent, ranging from Ceylon through the Peninsula, along the southern slope of the Himalayas to Southern China (Formosa); it is scarcer in the Malayan Peninsula and the northern parts of Siam, and appears to be entirely absent in the Archipelago. It is of very gentle habits, feeding on small frogs; it attains to a length of 2 feet, but generally smaller.

Another family are Fresh-water Snakes, the *Homalopsidæ*. All the Indian fresh-water snakes of this family have a grooved fang at the hinder extremity of the maxillary bone. They are aquatic, and are only occasionally found on the beach; several of them even enter the sea, and in several points of their organization approach the truly marine snakes, with which they have been associated in Gray's system. They may easily be recognised by the position of the nostrils on the top of the snout, which enables them to breathe by raising but a very small part of their head out of the water; it is the same arrangement as that in the crocodiles, sea-snakes, and other aquatic animals. Many have a distinctly prehensile tail, by means of which they hold on to projecting objects. Their food consists entirely of fish, and, in a few species, of crustacea also. All of them appear to be viviparous, and the act of parturition is performed in the water. They do not grow to any considerable size, are of a gentle disposition, and their bite would be by no means dangerous. They will not feed in captivity, and therefore die after a short time.

Psammodynastes pulverulentus, *Günth.*, is one of the family *Psammophidæ* or Desert Snakes.

This one has a very repulsive aspect; its dark, undefined colours, short and thick head, and swollen lips, caused by large hidden fangs, give it the appearance of a venomous snake.

The tenth family are Tree Snakes, or *Dendrophidæ*. They are diurnal species, living in trees, and feeding chiefly on tree lizards; they are found in all the tropical regions.

The Whip Snakes, or *Dryophidæ*, are the eleventh family. Asiatic species have a long fang-like tooth in the middle of the maxillary, and all provided with a posterior grooved tooth.

The twelfth family are the Dipsades, or *Dipsadidæ*. All the Indian species with a grooved fang behind; and several, moreover, with fangs in front. The Indian dipsades are nocturnal tree snakes, with a vertical pupil, a short, broad head, and compressed, elongate body.

The thirteenth family are Lycodontes, or *Lycodontidæ*. *Lycodon aulicus* is one of the most common snakes of the Indian continent and Ceylon; it does not extend northwards to China, and becomes scarcer on the coasts of the south-eastern parts of India. It occurs in only a few of the islands—in the Philippines and in Timor.

The *Amblycephalidæ*, or Blunt-heads, is the fourteenth. *Amblycephalus* boa is one of this family. The head of this singular snake resembles most that of a mastiff, the lips being arched and tumid; it climbs with great facility, frequenting the roofs of the huts of the natives in pursuit of its food, which consists of insects. It belongs properly to the fauna of the Archipelago, inhabiting Java, Borneo, and the Philippine Islands. Cantor found it at Penang. It does not appear to be common anywhere. It readily bites; and attains to a length of 3 feet, the tail being one-third.

Rock Snakes, or *Pythonidæ*, are a fifteenth family. The rock snakes are found in the hottest parts of Africa, Asia, the East Indian Archipelago, and Australia. They climb as well as they swim; most of them prefer the neighbourhood of water. This family contains the largest snakes. Only one genus, the python, is found in British India.

Python reticulatus and *P. molurus*, two species of Indian rock snakes, are among the largest of living reptiles. Of snakes, only their African congeners and the American *Eunectes murinus* can be placed beside them. Their dimensions and their strength, however, have been much exaggerated; specimens of 18 to 20 feet in length are very rare, although isolated statements of the occurrence of individuals which measured 30 feet are on record and worthy of credit. Rock snakes from 15 to 20 feet long have the thickness of a man's thigh, and will easily overpower a small deer, a sheep, or a good-sized dog. The rock snakes must attain to a considerable age. A Python *reticulatus* lived in the menagerie of the Zoological Society of London for 15 years; when brought to England it was about 11 feet long, and in ten years it had attained to a length of 21 feet, after which no further growth could be observed. The males remain smaller than the females. The rock snakes will propagate in captivity,—the Indian *P. molurus* having bred in Paris, and the African *P. sebae* in London. In both cases the eggs were incubated by the mother, and in the former successfully hatched.

Python reticulatus, Gray. It often takes up its abode in outhouses, preying at night,

and is thus useful in destroying vermin, although plunder is occasionally committed in poultry yards. When kept in captivity, it is of importance to supply it with a small tank of water, in which it will frequently remain for days. Individuals of 16 feet in length are not of rare occurrence, and some about 30 feet long are on record. This species of the pythons of South-Eastern Asia is very numerous in the Malayan hills and valleys, feeding upon quadrupeds and birds. Dr. Montgomerie had seen in George Town, Penang, a young one which the inhabitants suffered to retain unmolested possession of the rice stores, in order to secure them against the ravages of rats.

Python molurus, Gray. The ground colour is light greyish-brown. This python, commonly known under the name of rock snake, and by some misnamed boa, is almost peculiar to the continent of India. Common in the Southern Peninsula and in Bengal, it extends northwards into the sal forest at the foot of the Himalaya, and probably to Southern China.

The *Herpetodryas oxycephalus* of Reinwardt has in a remarkable degree the power of laterally compressing the neck and the anterior part of the body, when the greyish-blue skin becomes visible between the separated scales. In such state of excitement, it raises nearly the anterior third vertically from the ground, continues fixed during several seconds with vibrating tongue, and bites. It then throws itself down, to rise to a renewed attack.

The seventeenth family are Wart Snakes, *Acrochordidæ*.

Chersydryus granulatus is found in the rivers and on the sea-coasts of numerous islands of the Archipelago, extending to New Guinea and the Philippines. It inhabits also the eastern coasts of Southern India and the Malayan Peninsula, and sometimes it may be seen three or four miles distant from the shore. It is not venomous, as has been stated by writers.

The terrestrial family of Elapides, or *Elapidæ*, are venomous colubrine snakes; the fang is grooved, with a foramen at its extremity; one or two small ordinary teeth at a short distance behind it.

Naja tripudians, Merr., has eight varieties, forming but one species, which is widely spread all over the E. Indies. Its chief enemies are the jungle-fowl, which destroy the young brood, and the herpestes or ichneumons, which will attack and master the largest cobra. In districts where the cobras or other venomous snakes have too much increased in number, the most efficient way of destroying them is to protect their natural enemies. The cobra is the most common venomous snake of the East Indies.

Ophiophagus elaps. This remarkable snake is easily recognised by the large shields surrounding the occipitals. Although rather rare, it has a very wide geographical range: in almost every part of the Indian continent, the Andaman Islands, Java, Sumatra, Borneo, the Philippine Islands, and, according to Dumeril, also in New Guinea. It is one of the largest and most deadly venomous snakes, attaining to a length of more than 12 feet, of which the tail is about one-fifth. It inhabits hollow trees, and is sometimes found resting between the branches; it feeds on other snakes.

Bungarus species are not numerous in the Malayan countries, but *B. candidus* and *B. fasciatus* are of no uncommon occurrence in Bengal and on the Coromandel coast, where, however, it should be observed, a class of the natives ('serpent charmers') earn a livelihood by capturing and exhibiting serpents; this craft is unknown among the Malays. *B. flaviceps*, *B. candidus*, and *B. fasciatus*, like the rest of the venomous serpents, are very ferocious when attacked, but unprovokedly they are not known to attack man; on the contrary, when met in the jungle, they attempt to escape. When trod upon, or struck, their rage is instantly excited; in self-defence they will even turn from their retreat, and then their habitual sluggishness is roused to furious activity. Preparing to attack, the head is, by a short curve of the neck, brought closely to the body, and drawn far backwards, when, suddenly darting the anterior part of the body obliquely upwards, they bite. The height of the place where the wound is inflicted of course depends on the length of the serpent, which is capable of darting nearly the anterior half of the body. Notwithstanding the circular pupil, they appear to shun the light, hiding the head under the folds of the body; and they are singularly uncertain in their movements, often suddenly jerking the head or tail without any apparent object. Like all serpents of tropical Asia, they seldom expose themselves to the sun; when during the day they leave their hiding-places, they select the shade. The genus *Bungarus* is terrestrial, feeding on rats, mice, serpents (*Col. mucosus*, *Linn.*), and toads. Like other venomous serpents, when the venom has been inflicted on their prey, they disengage it from the fangs, sheath and place them as horizontally as possible, in order that they may offer no resistance to the introduction into the mouth of the lifeless prey, which is now seized head-foremost. The innocuous serpents bite or strangle their prey, which, when life is extinct, is either swallowed at once, or, if it happen to have been killed in a position likely to render the deglutition difficult, is often disengaged from between the teeth, and seized a second time by the head. In captivity these serpents refuse food, but greedily lap up and swallow water. A fowl, four minutes after it had been bitten on the inner side of the thigh by a *Bungarus fasciatus*, fell on the wounded side, and was shortly after seized with slight purging. The eyes were half closed, the pupils alternately dilated and contracted, immobile. In 17 minutes slight spasms occurred, under which the bird expired 43 minutes after it had been wounded. Another fowl, wounded in the same place as the former, by the same serpent, but after an interval of seven hours, expired under similar symptoms, only more violent spasms, in the course of 28 minutes. Venom taken from another serpent, the fangs of which had been extracted, was inoculated by a lancet-incision in the right thigh; four minutes after, the fowl was seized with trembling, fell, and remained lying on the wounded side, with the eyes closed, but it gradually recovered, and rose, apparently recovered, 30 minutes after the inoculation of the venom. Other fowls were killed by different serpents of this species in 20 to 31 minutes. Fowls bitten by *Bungarus candidus* expired under similar symptoms, within 30 to 45 minutes; dogs from within

1 hour 10 minutes to 2 hours, under symptoms noted in Russell's Experiments. The venom of *Naja lutescens*, *Laurenti*, was carefully obtained, so as to avoid any admixture of saliva, by compressing the venomous glands. It issued from the lower aperture of the fangs in viscid drops of a syrupy consistency, and was received as it fell from the fangs in platina capsules. The serpents operated upon were an adult cobra di capello, *Naja lutescens*, *Laurenti*, and one of its varieties, *Naja kaoutidia*, *Belanger*. In every instance the venom readily changed the blue of litmus to red, and restored the bright yellow to turmeric paper that had been reddened by the application of caustic alkali,—an unequivocal proof of acidity. When left to spontaneous evaporation, it dried into a varnish resembling mucilage, or the glair of an egg, cracking in all directions; and on being heated, it deposited an abundant conglum, apparently albuminous. In either instance, when redissolved it retained its acid property.

What the nature of this acid may be, it was impossible to determine from the small quantity operated upon; nor was Dr. Cantor prepared to say that the poison itself is an acid, although, if it be not so, it is certainly associated with one. The poison itself probably consists of some compound, which would be wholly disorganized under any attempts at detection by chemical means.

The *Hydrophidæ* are a family of Sea-snakes. The sea-snakes are inhabitants of the tropical parts of the Indian and Pacific Oceans, extending from the coast of Madagascar to the Isthmus of Panama; they are most numerous in the East Indian Archipelago, and in the seas between Southern China and North Australia, being represented on the outskirts of the geographical range we have mentioned by only one species, and that the most common, viz. *Pelamis bicolor*. The most striking feature in the organization of the sea-snakes is their elevated and compressed tail, the processes of the caudal vertebrae being much prolonged and styliform. The food of the sea-snakes consists entirely of small fish; all the species are viviparous, bringing forth, without leaving the sea, from four to nine young ones. They have very formidable and very numerous enemies in the sea eagles (*Haliæetus*), in the sharks, and other large raptorial fishes. There is no other group of reptiles, the species of which are so little known, and the synonymy of which is so confused, as that of the sea serpents. Our present knowledge of the geographical distribution of most of the species is extremely vague.

The *Crotalidæ* are a family of Pit Vipers. The pit vipers are found only in Asia and America; those of the New World surpassing the Asiatic species in size, and therefore they are much more dangerous.

The *Trimeresures* are Tree Snakes, as is indicated by their prehensile tail and by their green or varied coloration. In general they are sluggish, not attempting to move out of the way; and as they very closely resemble the branch on which they rest, they are frequently not perceived until they prepare to dart, vibrating the tail and uttering a faint hissing sound, or until they have bitten the disturber of their rest. The bite of larger specimens, from 2 to 3 feet long, is more dangerous, and has occasionally proved fatal. When roused,

these snakes are extremely fierce, striking at everything within their reach; and Cantor says that in the extreme of fury they will fix the fangs in their own bodies.

Trigonocephalus Sumatranus, *Raffles*. In Malayan countries this variety is not of so rare occurrence as the species appears to be in Sumatra. *Tr. puniceus* is in general sluggish, but when roused is of ferocious habits; *Tr. gramineus*, *Tr. Sumatranus*, and *Tr. puniceus* resemble the genus *Bungarus*; their mode of attack is also similar; like *Vipera Russellii*, *Shaw*, when it prepares to dart, they vibrate the prehensile tail, and utter a faint hissing sound. As the pupil is vertically contracted by the light, they frequently miss their aim, and, like *Bungarus*, *Naja*, *Vipera Russellii*, and *Hydrus*, in the extreme of fury they will fix the fangs in their own bodies. In Bengal, most terrestrial serpents keep to the water during the hot season, but the rains send them abroad in search of dry localities. Although this genus has venomous organs as highly developed as *Crotalus* or *Vipera*, the effects produced by wounds of two species at least appear to be less dangerous.

Hydrus schistosus is incredibly numerous in the Bay of Bengal, at Penang, and Singapore, far more so than any known terrestrial serpent. The fishing-nets are hardly ever worked but that one or more are among the contents. The large individuals are very ferocious; the young ones are less so. Fortunately for the fishermen, the light blinds these serpents, which when out of their proper element become very sluggish and soon expire. This accounts for the safety of the class of men whose daily calling brings them in immediate contact with animals the wound of which is fatal. The fishermen in the Straits of Malacca are aware of their danger, and therefore take care to avoid or destroy these reptiles while landing the fishes. The Malays denominate them *Ular Laut*, i.e. serpents of the sea; among which, however, the innocuous *Acrochordus granulatus*, *Schneider*, is also comprised as an inhabitant of the coasts.

The incantation of serpents has usually been attributed to the power of music, and a late writer remarks that 'it is so strange that many have denied the fact, while others have asserted it to be a deception.' The general belief, however, 'is that serpents are extremely sensitive of impressions from musical notes or modulations, under the influence of which they wreath their bodies from feelings of pleasure, while to these graceful contortions and undulating movements, the charmer, who plays on a pipe or some simple instrument, adapts the time.' This is the common theory,—that serpents are rendered docile by music; but Mr. Mason has seen the cobra dance in imitation of its Burmese master, while he sat upon his haunches before it, making the motions with his body and hands that he wished the snakes to imitate, and which it did perfectly without any music whatever, or any other sound except an occasional authoritative *hay!* A pair of cobras kept perfect time with their master, while no sounds were uttered, and allowed him to handle them as he wished. At his command they danced, and at his command they lay gracefully down as if asleep. The Burmese usually put a wild one, which they secure when half or two-thirds grown, with a practised tame one. These will dance and

wreath themselves at their master's pleasure. Sometimes darting at him, but at that moment he straightens himself up, with his eyes fastened upon the snake's eyes, and in a gruff voice commands them to perform. Following his motions, they stand almost upright with their hoods dilated and their colours all in play as they dance; now swift, now slow, now approaching, now receding; and he has seen the younger in his receding movements give unequivocal tokens of desiring to make his exit, but on hearing his master's call he turned again, though evidently with more reluctance than the old actors. The power of effecting all this is certainly attributable neither to magic nor music. It must, he thinks, be ascribed to fear, and to a very simple principle, the power of imitation,—a power possessed by different animals in different degrees. Serpents are by no means the least docile of the animal kingdom; nor are cobras the most intractable of serpents, the cobra and the bungarus being the favourites with the snake-charmers.

A large python, usually called a boa, is not uncommon in Tenasserim. Mr. Mason had seen the head of one that was killed by a drove of hogs, whose whole length measured 18 feet, and the natives say they grow much larger. The Karens have an apothegm that the largest python can swallow a full-grown buck rusa or sambar deer, horns and all, without inconvenience. They are often seen coiled up among the branches of trees on the banks of streams in the interior, where they are frequently noosed by Karens, who regard them as valuable food. He has seen a Karen seize one 9 feet long by the tail in the water, and with the aid of his associates succeed in capturing him.

Hypnale nepa. Found in Ceylon, but also in the Peninsula of Southern India, the Annamallay mountains. The carawala is much dreaded, although its bite is but exceptionally fatal to man, and in such cases death does not occur before the lapse of some days.

The *Vipers*, or *Viperidae*, inhabit the Old World and Australia, and are thoroughly terrestrial snakes.

Daboia Russellii is a native of Ceylon and of the Peninsula of India, the Annamallay mountains, Waltair, Bombay, and Almora (5500 feet elevation), the Himalayas, in Kulu, at 3400 feet. Length 50 inches, tail measuring 7 inches; it is thoroughly terrestrial, feeding chiefly on mice. It is one of the most common venomous snakes, and, on account of its size and nocturnal habits, more dangerous than the *Trimeresurus* and *Hypnales*. The far-famed, dreaded *Cobra monil*, or *Cobra manilla* of some, seems merely the young of this species. The old orthography is *monil*, which simply means a chain or necklace; and whoever looks at the markings of this snake, especially of the young one, must be struck with the resemblance thereof to a necklace.

Vipera echis, *Schlegel*; *V. noratta*, *Shaw*, *Russell*. *Kuttavyrien*, *Tam.* This little snake is very common in the Carnatic. Jerdon doubts that its bite would prove fatal to man. A dog bitten by one recovered. Of all the venomous land-snakes met with in Southern India, the only ones at all common are the cobra, the chain viper (*Vipera Russellii*), the *Bungarus candidus*, and the little *Vipera echis*. Most of the others

are peculiar to the forests of India. Trigonocephali are not usually fatal. Jerdon had known several cases of bites by Trigonocephalus Malabaricus and Tr. nepa, and none proved fatal.

Batrachians are a sub-class of reptiles. Moisture is as necessary for batrachians as food and air, hence they are found only in damp places or in the neighbourhood of water. When they dive, the lungs are emptied, and the respiration remains interrupted for one or two hours, after which time the animal is compelled to rise to the surface in order to breathe. Many batrachians live at some distance from water; all, however, as far as is known at present, enter it at the season of propagation. The males have also generally a distinctly more slender form than the females. The eggs are impregnated the moment they are deposited by the female in the water. The young ones, or tadpoles, have a thick ovate body without legs, terminating in a long, strong, compressed tail, which serves as an organ of locomotion in the water. The development is about a hundred days in the European Rana temporaria, but several years elapse before the young perfect batrachian attains its full size. None are poisonous.

REPTONIA BUXIFOLIA. St. Gurgura, Gurgara, Garar of Salt Range. The wood is small, but hard, fine-grained, and useful. It is common in the Trans-Indus districts. Exclusively a Panjab wood.—Stewart.

RESERVOIRS are common in many parts of India, and where water is far from the surface, usually a bold flight of steps 20 to 40 feet wide leads down to the water; they are in the form of tanks, and of wells known as baories or baolies.

RESIDENCY, in British India, a Political Agency at a native court; the political officer holding it is styled the Resident. In Netherland India, a province.

RESINS.

Ratinij,	ARAB.	Gugal,	HIND.
Samgh, Sanawbar,		Rai, Rala,	
Sung-chi,	CHIN.	Gugalam,	TAM.
Sung-hiang,		Gugalamu,	TEL.
Doona, Dammar,	HIND.		

Gums and resins are exported from India to a considerable extent, but cutch (catechu) and gambier, alike in quantity and value, far exceed those of other kinds.

	1880-81.	1881-82.	1882-83.
Cutch and gambier,	320,755 cwt.	198,897 cwt.	246,506 cwt.
Other sorts,	899 "	1,841 "	1,722 "
Cutch and gambier,	Rs. 42,66,415 Rs.	25,30,540 Rs.	30,62,434 "
Other sorts,	11,814 "	16,056 "	14,871 "

These products are very abundant throughout the East Indies, and are largely utilized by the people, but they are carelessly collected and packed, and are presented to European commerce in unattractive forms. Also, in the course of trade, cutch and gambier, rosin, pitch, tar, and dammer, are imported into India and re-exported. Since the second edition of the Cyclopædia of India was published, Mr. E. J. Atkinson, in 1876, described the gums and gum-resins of the N.W. Provinces of India, and Dr. M. C. Cooke of the Indian Office in 1874 reported on all those of British India, referring several times to this Cyclopædia. He classed them as gums, gum-resins, true resins, and oligo-resins, but in commercial returns these substances are usually placed under one heading.

i. Gums, trees yielding them.

a. True gums.

Acacia Arabica, Willd.
A. catechu, Linn.
A. ferruginea, D.C.
A. leucophlea, Willd.
A. modesta, Wall.
A. speciosa, Willd.
A. sundra, D.C.
A. vera, Willd.
Adenanthera pavonina, L.
Ægle marmelos, Carr.
Amygdalus Persica, Linn.
Anacardium occidentale, L.
Andersonia, sp.?
Anona squamosa, L.?
Armenia vulgaris, P.
Artocarpus integrifolia, L.
Azadirachta Indica, Juss.
Barleria prionitis, Linn.
Bassia longifolia, Linn.
Bauhinia emarginata, Roxb.
B. parviflora, Ham.
B. retusa, Wall.
B. Vahlia, W. and A.
Borassus flabelliformis, L.
Buchanania latifolia, Roxb.
Calyptranthes caryophyllifolia, Willd.
Careya arborea, Roxb.
Cathartocarpus fistulata, Pers.
Cedrela toona, Roxb.
Celtis orientalis, Linn.
Chickrassia tabularia, Juss.
Citrus decumana, Linn.
C. limetta, Risso.
C. medica, Linn.
Cocos nucifera, Linn.
Conocarpus latifolius, Roxb.
Cordia Rothii, Ram.
Elæodendron paniculatum, W. and A.
Elate sylvestris, Linn.
Embelia officinalis, Gart.
Erythrina Indica, W. and A.
Feronia elephantum, W. and A.
Garuga pinnata, Roxb.
Gossypium herbaceum, L.
Griseola tomentosa, Roxb.
Gyrocarpus Jacquinii, Roxb.
Heritiera littoralis, Dry.
Jatropha curcas, Linn.
Melia azedarach, L.
M. sempervirens, L.
Michelia champaca, L.
Mimusops elengi, Linn.
M. kaki, W.
Morus Indica, Willd.
Nerium suaveolens, —?
Odina wodier, W. and A.

Poinciana elata, W. and A.
P. regia, Bojer.
Pongamia glabra, Vent.
Prosopis spicigera, L.
Prunus domestica, Linn.
P. puddum, Roxb.
Punica granatum, Linn.
Sapindus acuminatus, Wall.
S. emarginatus, W. and A.
Schleichera trijuga, Willd.?
Semecarpus anacardium, L.
Soyimida febrifuga, Juss.
Spodias mangifera, P.
Swietenia chloroxylon, R.
S. mahogani, L.
Tamarindus Indica, Linn.
Tamarix divica, Roxb.
Terminalia arjuna, W. and A.
T. belerica, Roxb.
T. catappa, L.
T. tomentosa, W. and A.
Thespesia populnea, Cor.
Tricosanthes cucumerina, L.?
Vachellia farnesiana, W. and A.
Wrightia antidysenterica, Br.
W. tinctoria, Br.
Zizyphus flexuosa, Wall.
Z. jujuba, Lam.
b. Pseudo-gums.
Ailantus excelsa, Roxb.
Cochlospermum gossypium, D.C.
Cycas circinalis, Linn.
Eriodendron anfractuosum, W. and Arn.
Grevillea robusta, Cunn.
Macaranga Indica, W.
M. tomentosa, W.
Moringa pterygosperma, Gertn.
Opuntia rubescens, Salm.
Salmalia Malabarica, W. and A.
Sterculia urens, balanghas, campanulata, colorata, fufida, and populifolia.
Uvaria tomentosa, Roxb.
c. Astringent gums.
Agati grandiflora, Desv.
Butea frondosa, Roxb.
B. parviflora, Roxb.
B. superba, Roxb.
Calyptranthes caryophyllifolia, Willd.
Mucherus? Salmalia Malabarica?
Pterocarpus Indicus, Willd.
P. marsupium, Roxb.

ii. Gum-Resins.

a. Emulsive gum-resins.
Gamboge plants.
Garcinia cambogia, Desr.
G. cowa, Roxb.
G. Griffithii, And.
G. mangostana, Linn.
G. morella, Desr.
G. pictoria, Roxb.
G. pedunculata, Roxb.
G. Travancorica, Bedd.
G. Wightii, And.
G. xanthochymus, Hooker.
b. Fœtid gum-resins.
Dorema ammoniacum, Don.
D. aureum, Stocks.
Ferula galbaniflua, Buxs.
F. hooshee, Royle.
F. orientalis, Linn.
F. Persica, Willd.

F. alliacea, Boiss.
F. Lehmannii, Boiss.
Galbanum Persian.
Gardenia lucida, Roxb.
G. gumifera, Roxb.
Narthex asafœtida, Falc.
Opoponax chironium, Koch.
Sagapenum ferula, sp.?
Sarcocolla, —?
c. Fragrant gum-resins.
Balsamodendron mukul, Hooker.
B. myrrha, Ehr.
B. Roxburghii, Arn.
B. pubescens, Stocks.
Borwellia Bhau-dajiana, Birdw.
B. Carteri, Birdw.
B. Frereana, Birdw.

RESINS.

B. thurifera, *Coleb.*
Calamus draco, *Willd.* ?
Draecena draco, *Linn.* ?
Mangifera indica, *Linn.*
Myrrh.
Nagdana.

Olibanum.
Pterocarpus draco, *Linn.* ?
Styrax benzoin, *Dryand.*
Terminalia angustifolia,
W. and A.

iii. True Resins.

a. Copalline resins.

Canarium Bengalense, *R.*
C. strictum, *Roxb.*
Copal.
Dammara orientalis, *Lam.*
Dammar daging, rose
dammer.
Dammer of Andamana.
Dammer of Borneo.
D. or Salangan putih,
white dammer.
D. hitam or black
dammer.
Diospyros glutinosa, *Roxb.*
Hopla micrantha, *Hook.*
H. odorata, *Roxb.*
H. parviflora, *Bedd.*
Pistacia Cabulica, *Stocks.*
P. Khinjuk, *Stocks.*
P. lentiscus, *Linn.*
Poon-yet or Pwai-gnet.

Shorea robusta, *Roxb.*
S. sericea, *Dyer.*
S. tumbuggaia, *Roxb.*
Trachylobium Mozambic-
ense, *Peters.*
Vateria acuminata, *Heyne.*
V. indica, *L.*
Vatica lanceaefolia, *Blume.*
V. Roxburghiana, *Wight.*

b. Elemi or soft resins.
Ailantus Malabarica, *D.C.*
Calophyllum calaba, *Jarg.*
C. inophyllum, *L.*
C. other species.
Canarium commune, *Linn.*
Cassia auriculata, *Linn.*
Dammar kejie.
Gutta Hunghas.
Kunnee.
Maeshaksee.

iv. Oleo-Resins.

a. Balsams.

Balsamodendron Berryii,
Arn.
Chloroxylon Swietenia, *W.*
and A.
Dipterocarpus alatus, *Roxb.*
D. incanus, *Roxb.*
D. tuberculatus.
D. turbinatus, *Gart.*
Dryobalanops camphora,
Coleb.
Hardwickia pinnata, *Roxb.*
Liquidambar altingia, *Bl.*
L. orientale, *Miller.*
Melaleuca minor, *Smith.*
Mesua ferrea, *Linn.*
Mohal balsam of Cachar.
b. Natural varnishes.
Buchanania latifolia, *W.*
and A.
Holigarna longifolia, *Roxb.*

Melanorrhoea usitatissima,
Wall.
Odina wodier, *Roxb.*
Rhus succedanea, *D.C.*
R. vernicifera, *D.C.*
Semecarpus anacardium,
Linn.
S. Travancorica, *Bedd.*
c. Turpentine and tar.
Abies Smithiana, *Loudon.*
Cedrus.
Pinus excelsa, *Wall.*
P. Gerardiana, *Wall.*
P. Khassiana, *Brandis.*
P. Latteri, *Mason.*
P. longifolia, *Roxb.*
P. Massoniana, *Sieb. and*
Zuch.
Sethia indica, *W. and A.*
Tectona grandis, *Roxb.*

The gums of the East Indies have already been noticed under that head, and the following remarks will be restricted to a notice of the chief commercial resins.

Resinous substances are found in greater or less abundance in most plants. Many of the resins of commerce exude naturally from fissures in the bark or in the wood, or they are obtained from incisions made in the stems of certain trees and shrubs. As they exude they are commonly mixed with an essential oil, which either evaporates on coming in contact with the air, or is resinified by the action of oxygen. Such mixtures of volatile or essential oil with resins are sometimes called balsams. When gum is mixed with resins, another class of substances is produced, called gum-resins.

Resins soluble in spirit of turpentine are used for the most part in preparing dyes, varnishes, lacquers, sealing-wax, etc.

The rosin or common resin of Europe is obtained as a residuary matter in the process for obtaining oil of turpentine,—an oleo-resin by distillation of American turpentine with water.

Ammoniacum is the product of *Dorema ammoniacum*, *Don*, and an identical gum-resin is obtained from *D. aureum*, *Stocks*, of Sind.

RESINS.

Asafetida is from the *Narthex asafetida*, *Ferula alliacea*, *Boiss.*, *F. Lehmanni*, *Boiss.*, and it is said the *F. Persica*, *Willd.* It is used medicinally and as a condiment.

Balm of Gilead is an oleo-resin from the *Balsamodendron Berryi*, *Arnott*, a tree of N. Africa and Arabia, and is called by the Arabs *Balsam Israeli*. It is of syrupy consistence, limpid, and yellowish, but thickens and solidifies by age. It is used in surgery, but is rarely found pure. Mr. J. A. Murray says it is a product of *B. Gileadense*, *Kunth.*, and calls it *Ood-i Balisan* and *balsam of Mecca*.

Myrrh, yielded by the *Balsamodendron myrrha*, *Ehr.*, of Africa and Arabia. The commercial varieties are Turkey myrrh, myrrh in tears, East Indian myrrh, and East Aden myrrh. B. Roxburghii, *Arn.*, of India, is supposed by Dr. Royle to yield part of the myrrh of commerce.

Googul of the bazars of India, the b'dellium of commerce, is obtained from *Balsamodendron mukul*, *Hooker*, also from the *Balsamodendron pubescens*, *Stocks*, and from the *Boswellia glabra*.

Ganda feroza, from *Boswellia thurifera*, is largely used as an application to indolent ulcers and wounds, and supposed to form the chief ingredient of Wroughton's ointment. Mr. J. A. Murray says it is produced from *Boswellia papyrifera*, *Hoch.*, gives it as names *Luban* and *Ood*, and says it is frankincense and *olibanum*.

Benzoin, the *Ood* or *Luban* of the Indian bazars, is obtained from the *Styrax benzoin*, *Dryand.*, a tree of Borneo, Java, Siam, and Sumatra, in the form of tears, lumps, and translucent masses. That of Siam appears to be superior in fragrance to the Sumatra product, although both possess a delightful aroma.

Copals are known as soft Indian copal and oriental copal, also East Indian copal, Bombay anime, East Indian anime, and gum anime. These are names of the resin of the *Trachylobium Mozambicense*, *Peters*, which grows in Madagascar, on the E. coast of Africa, and in Zanzibar, and is known also as *Hymenaea Mozambicensis*, *Kleine*. It is a large tree, its average length is 30 feet, with 5 to 6 feet of girth, but canoes 60 feet long have been hollowed out of a single stem. The value of the copal exported from Zanzibar in 1863-64 amounted to 163,353 dollars, about six pounds being sold for one Austrian dollar. Nearly all of it was sent to British India, Great Britain, and Hamburg. The Arabs and Africans recognise two kinds, viz. the raw copal (copal vert of the French market), and called *Sandarusiza miti*, 'tree copal,' or *chikaji*, corrupted by Zanzibar merchants to 'jackass' copal. This *chikaji* is either picked from the tree or is found shallowly embedded in the loose soil. This is the only kind in Zanzibar island. And 'true or ripe copal,' called *Sandarusi*, the product of vast extinct forests, and found at depths beyond atmospheric influences, and has, like amber and similar gum-resins, been bituminized in all its purity.

Dammer.—The most important of all the solid resins produced in the East Indies are those which are included under the general Malay name of *Dammer*. The *dammers* are obtained from trees of the genera *Vateria*, *Canarium*, *Shorea*, and *Vatica*. *Vateria* and *Canarium* yield by far the largest part (if not the whole) of the *dammers* produced on the western coast of the Peninsula, whilst the *Shorea* and *Vatica* trees yield the greater part of that collected in the northern and eastern districts, and those of Further India and the Archipelago are chiefly from species of *Canarium*.

White Dammer of the western coast of India, called also *Piney resin*, is from the *Vateria indica*. It is the *Doopada* resin of Mysore, and the *Payanee* or *Piney* of the Malabar people. *Dupa maram*, *CAN.*; *Safed damar*, *HIND.*; *Vellai kundrikum*, *TAM.*; *Payanee*, *MALABAR.*; *Piney maram*, *TAM.*; *Ohadacula*, *TAM.* This is a very large and stately tree, a native of Malabar and Mysore. The young shoots, and all tender parts except the leaves, are covered with fine stellate pubescence. The *Piney resin* occurs of all shades of colour between pale green

and deep yellow; the finest pieces are called kahruba or amber, and are sold as amber in the bazars of Bengal. Candles are made of this resin in Malabar, which diffuse, in burning, an agreeable fragrance, give a fine clear light, with little smoke, and consume the wick without snuffing.

One variety of it is the *Compact Piney Resin*, or first sort white dammer of the western coast, and occurs in large lumps of all shapes, and varying in colour on the outside from a bright orange to a dull yellow, bearing evident marks of having adhered to the bark of the tree. It has a shining vitreous fracture, is very hard, and bears a great resemblance to amber. Its colour (internally) is of all shades, from a light green to a light yellow, the green tint predominating in the generality of specimens. It is more soluble in alcohol than black dammer, and burns with less smoke and a more agreeable odour. It is easily distinguishable from all other Indian resins by its superior hardness, its colour, and amber-like appearance.

A second variety, the *Cellular Piney Resin*, or second sort white dammer of the western coast, occurs either in small lumps or in large masses, generally of a shining appearance and balsamic smell, and has a very cellular structure, which is attributable partly to the mode of collection, and partly to the age of the tree. Notches being cut in the trunk of the tree sloping inwards and downwards, the resin collects in the cavity, and is either permitted to dry on the spot, or is collected and dried by the application of heat. It is of all shades, from light green to light yellow or white, and is usually translucent. Specimens are sometimes seen in which, from the desiccation having been irregularly conducted, the resin is more opaque, of a dull green colour, and full of air-bubbles, presenting the appearance of having undergone a partial fermentation. This kind of resin may be recognised by its cellular appearance and balsamic smell; this latter, however, which is of course due to the volatile oil it contains, is gradually lost by long keeping or constant exposure to the air. On splitting open old and decayed trees, portions of a dark-coloured resin are often found, having the solid consistence of the first variety, but the inferior quality of the second. The inspissated juice of the *Vateria Indica* tree is used for mixing with beeswax in making candles. In Malabar, the fresh resin is called piney varnish. It is of a light grey colour, with a strong balsamic odour. The resin which first exudes is called *Chengilium* (this is white); that which flows subsequently is termed *Coongilium* (darker than the above), and when dried it is called dammer (black). The *Vateria lanceifolia* of the Khassya mountains and Assam yields a similar resin, which is used as incense. *V. acuminata* yields the piney resin of Ceylon.

The dammers of the northern and eastern districts are from the sal tree, *Shorea robusta*, and other species. *Shorea robusta* is a native of Morung, the Palghat mountains, and Northern Circars. The sal tree of Northern India and its resins are called Guggilam in Telugu, and Tala-gotso in Uriya. It is the Kala, Doona, and Gugulam of Indian commerce, and occurs in brittle, stalactitic pieces. *Shorea robusta* yields abundance of dammer, the superior kinds of which are efficient substitutes for the pine resin of the European pharmacopoeia. It occurs perfectly transparent and colourless, but in the bazars the colour ranges from pale amber to dark brown. It is devoid of taste and smell. Sp. gr. 1.097 to 1.123, easily fusible, partially soluble in alcohol (83.1 per 1000), almost entirely in ether, perfectly in oil of turpentine and the fixed oils; sulphuric acid dissolves and gives it a red colour. Two parts of colourless dammer and 2½ parts of oil of turpentine, make the best varnish for lithographic drawings. This occurs in sticks much resembling in shape the black dammer, but differing widely in colour and consistency. In colour it varies from a light yellow to a dark brown, the two colours being frequently blended in the same lump, and giving it the appearance of having a regular 'grain.' It is friable, and differs from the white

dammer of the western coast in its inferior hardness, its opacity, and its peculiar form, and from the black dammer in its colour. There are extensive tracts of shorea forest in the Gumsur and Cuttack provinces. The Khond and Uriya races living in and near these jungles, wound trees in several places; the resin issues, and is collected when sufficiently solid. The dammer collected from the decayed parts of the tree is of a dark colour. The Khond and Uriya races make the leaves into plates, from which they eat their food, and also roll up tobacco in them to smoke like a cheroot. In time of famine, the above tribes live on a soup made from the fruit of this tree.

Shorea tumbuggain grows on the western coast, but does not appear to produce much, if indeed any, of the resin collected for sale.

Poon-yet and *Pwai-nyet* dammer of Burma is found on several different trees, sometimes also in a hollow among rocks, sometimes in the ground, and occasionally even in the hollow post of an old house, amongst them the *Dipterocarpus laevis* and *Hopea odorata*. The Rev. C. S. Parish says it is a combination of various gums and resins, probably also of oils gathered by the *Trigona leviceps* bee, and built up and moulded very much as wax is moulded, except that the wax formed by the honey bee is in cells of perfect and uniform symmetry, while the cells of *Pwai-nyet* have no regular form. When it builds its nest in the hollow of a tree, the aperture is lined with *Pwai-nyet*, and its rim is sometimes prolonged to a somewhat flattened trumpet-mouth shape, of a perpendicular diameter a foot or so, and 3 or 4 inches of transverse diameter. From 19 lbs. to 38 lbs. are obtained from one nest. Some of it is very like the dammer of the *Hopea odorata*. For caulking it is mixed with earth-oil or petroleum. One kind which this bee collects is very like the resin of *Bursera acuminata*, a tree of Canara.

Canarium Bengalense is a native of Sylhet and the adjacent mountainous countries, also Malabar, Tinnevely, and Courtallum. It flowers in May and June, yields a large quantity of very pure, clear, amber-coloured resin, which soon becomes hard and brittle, and is not unlike copal. In the Calcutta bazar it sells at 2 to 3 rupees per maund of 86 lbs. *C. nigrum*, *Roxb.*, of the Amboyna and Molucca islands, yields a reddish, soft, viscid substance from wounds in its bark. *C. strictum*, *Roxb.*, of the alpine forest of Courtallum and Tinnevely, is regularly rented for its dammer. When adhering to the tree it has a bright shining black appearance. From this the tree is called the black dammer tree, to distinguish it from the white dammer tree, *Vateria Indica*. The *Canarium strictum* is the *Carpoo coongilium* of Ainslie, the *Dammara nigra legitima* of Rumphius, and the *Canari* of the Malays. Its resin occurs in large stalactitic-shaped masses, of a bright shining black colour when adhering to the tree and viewed from a distance, but translucent and of a deep reddish-brown when held in thin laminae between the eye and the light. It is perfectly homogeneous, and has a vitreous fracture. Its shape appears to be due to the fact of the balsam having exuded in a very fluid state, and trickled down the trunk of the tree, where it gradually hardens by exposure to the sun, the fresh resin continuing to flow over that already hardened, gives rise to the stalactitic appearance of the huge lumps of resin, the outside of which much resembles the guttering of wax caused by placing a lighted candle in a draught. It is insoluble in cold, but partially soluble in boiling alcohol on the addition of camphor; when powdered it is readily soluble in oil of turpentine. Powdered and burnt on the fire, it emits a more resinous smell, and burns with more smoke, than white dammer. The size of the lumps of this resin, together with its colour and the peculiarity of shape already mentioned, suffice to distinguish it from other Indian resins. Mr. Brown of Trevandrum says the black dammer of *Canarium strictum* seems to be a great favourite of several species of insects, especially of one resembling a bee, called

by the hill-men Kallia, which lives in holes in the ground.

Under the names of elemi, also E. Indian elemi and Manila elemi, a concrete resinous exudation is imported into Great Britain from Manila. It is said to be from the *Canarium commune*, but this is doubtful. It is of a yellowish white colour.

Others of the dammers are obtained from the *Hopea micrantha*, yielding the Damar mata kushing and Damar batu of the Malays, and *H. odorata*, yielding the Thengan-tai of the Burmese, the last named greatly resembling the E. I. dammer from *Dammara orientalis*.

Dammara orientalis, a huge tree of the Archipelago, has been designated by seven names by different botanists, viz. *Abies dammara*, *Poir.*; *Agathis dammara*, *Rich.*; *Ag. loranthifolia*, *Salisb.*; *Dammara alba*, *Rumph.*; *Dammara loranthifolia*, *Spach.*; *Pinus dammara*, *Lamb.*; and *P. Sumatrana*, *Hort. Belv.* It yields the Damar puteh (white) and Damar katu of the Malays. It hangs from the tree like icicles, and is sold in Great Britain as East Indian dammer, to be used by varnish makers. Externally it is whitish from the powder; below that, it is of a straw colour or pale amber.

Cassia auriculata gum is prized in India for its medicinal value.

Camphor and *Camphor Oil* of commerce are obtained from the *Dryobalanops camphora* of Sumatra and Borneo. The oil is employed in rheumatism and as a varnish.

Dragon's blood, in lump and in reed, is used as a pigment. It is supposed to be derived from *Calamus draco* of S. China, Java, Sumatra, and perhaps of Burma.

Galbanum is a product of the *Ferula galbaniflua*, *Buhse*, a plant of Persia, but other species are also indicated as yielding both it and sagapenum.

Gamboge.—Several of the *Garcinia* yield the gamboge of commerce, but *G. morella*, *pictoria*, and *Wightii*, of the best qualities, and the most abundantly.

Gardenia.—The Dika mali or Kumbi pisin of India, a resin valuable in native surgery, is from the *G. gummifera* and *G. lucida*.

Garjan oils, from the *Dipterocarpus alatus*, *D. ineanus*, and *D. turbinatus*, are known also as wood-oils. They are large trees, natives of Burma and the islands in the Straits of Malacca. At the end of the dry season, in March or April, several deep incisions are made with an axe into the trunk of the tree, and a good-sized piece scooped out. Fire is placed into the cavity, and is kept burning till the oil begins to run. This when allowed to rest, separates into two layers, the upper consisting of a clear chegnut-coloured liquid balsam, and the lower, which is a flocculent deposit of the more solid resin, of a light ash colour. They are much used as natural varnishes for in-door work, but when dry are very brittle, and require constant renewal. The wood-oil of the *D. tuberculatus*, a tree of Chittagong and Burma, is known to the Burmese by the name of Eng.

Doona Zeylanica, *Thwaites*, yields Doona dammer. In colour and appearance it much resembles pine resin.

Gab, the resin of the *Diospyros glutinosa*, is used for caulking boats and canoes.

Hardwickia.—The dark red balsam of the *Hardwickia pinnata* is exactly like copaiaba in appearance and properties. It is a tree of the Travancore Ghats and of S. Canara.

Liquidambar genus has two species, *L. altingia* and *L. orientale*, both of them furnishing useful balsamic products. That of the former, a tree of Tenasserim and the Archipelago, is the Rose Maloe of commerce, the Rasa-male of the Javanese, a fragrant balsamic fluid. It is obtained by putting fire around the tree. The *L. orientale* of Anatolia and Asia Minor yields the liquid storax, an oleo-resin which is imported into India. It is not the storax of the ancients. Its liquid storax is obtained by pressing the inner bark. The outer bark is burned as a perfume.

Melanorrhæa usitatisima of Manipur and Burma yields a valuable natural varnish, which is extensively used.

The black varnish of Ceylon is from a species of *Semecarpus*. It is equal to the black varnish of China for lacquering.

Olibanum, also known as Luban, has been shown by Dr. (Sir George) Birdwood to be a product of *Boswellia Carteri*, *B. Bhau-Dajiana*, and *B. Frereana*. Indian olibanum is from *B. thurifera*, and its varieties *glabra* and *serrata*. The Nagdana tree, one of the *Burseraceæ*, yields also a luban of the bazars. *B. thurifera*, *Coleb.*, of the Coromandel hills, S. Konkan, Belgaum, and Bundelkhand, is a gum-resin used as a grateful incense, but is used in medicine for its stimulant, astringent, and diaphoretic properties.

Turpentine of good quality is obtained by incisions in the trunk of the *Pinus longifolia* of the Himalayas. It is the Ganda-baroz of Indian commerce. It is used medicinally, internally, and oil of turpentine is extracted from it. Tar is obtained by burning chips of the wood. Tar is obtained also from chips of *Pinus excelsa* and of *Cedrus deodara*. *Pinus Massoniana* of Burma and Japan yields a crude turpentine.

The oleo-resin from the *Cedrus deodara* is the Kelon-ka-tel of the natives of Northern India.

Sarcocolla has been by some supposed to be a product of *Penzance mucronata*, but others think it is from an umbelliferous plant.

Ceylon fishermen pay their boats' bottoms with a tar obtained by the smothered combustion of chips of the *Sethia Indica*, a tree of S. India and Ceylon.

REUNION, formerly called Bourbon, an island in the Indian Ocean, discovered in 1545 by Mascarenhas, a Portuguese. It is 49 or 50 miles long, and 27 broad. Its highest peak, a volcano, Piton des Neiges mountain, is 10,334 feet; Grand Bernard, 9743 feet; Piton de Fournaise, 7217 feet high. The lighthouse on Bel-air Point is in lat. 20° 53' 20" S., and long. 55° 39' 25" E.

REVACHIL is the ancient designation of an important range in the geography of Saurashtra.

REVALENTA ARABICA, a meal from the *Ervum lens*, a pulse grown all over India, and eaten as a dal in food, but is said to be heating, and to cause eruptions if too much indulged in. The flour of this plant was highly extolled as a farinaceous aliment. By a slight change, *Ervum lens* became the *Ervalemta*; and another person, by another little change, sold the same article as *Revalenta*, adding the term *Arabica* to denote its Asiatic origin.—*Dr. J. L. Stewart; Hassal.*

REVATI, daughter of raja Raivata, was married to Balarama, the elder brother of Krishna, to whom she bore two sons.—*Wh. H. of I.*

REVATI, in Mysore, rain in the spring months, 28th March and 11th April. The land is ploughed at this time.

REVATI DULAGONDA or Dula Gondi. TEL. *Tragia cannabina*, *L.* Dulagonda is a term used generally for a stinging plant, and the addition of revati more particularly refers to *tragia*, while Pedda dulagondi is more properly applied to *Mucuna pruriens*.

REVENUE BOARD, in British India, in Calcutta and Madras, a Board of three members who superintend the revenues of the country. There is no Revenue Board in Bombay, but there are two Revenue Commissioners, between whom the collectorates are divided, and who correspond immediately with Government, and are also Police Commissioners of their respective divisions.

During the occupation of India by the British, the land revenues have been superintended by its ablest officers; for even yet it is one of the three chief items to meet the expenditure, the other two being from salt and opium. In the south of

India, at the close of the 18th and beginning of the 19th century. Sir Thomas Munro reported at length on the land revenue; and in Northern India, reports on the settlement of the land revenue in the North-Western Provinces, under the thirty years' regulation ix. of 1833, were drawn up by men, many of whom obtained a name for themselves as administrators. Thomason reported on his settlement of Azimgarh, Edward Thornton on Saharunpur and Muzaffarnagar, H. M. Elliot on Meerut, John Thornton on Aligarh, R. Money on Moradabad, R. H. P. Clarke on Rudaon, W. J. Conolly on Bareilly, J. W. Muir on Shahjahanpur, G. F. Edmonstone on Minpuri, C. G. Mansel on Agra, M. R. Gubbins on Etawa, H. Rose and W. Muir on Cawnpur, R. Montgomery on Allahabad, and E. A. Reade on Gorakhpur. Garhwal and Kamaon were reported on by J. H. Batten, Dehra Doon by A. Ross, Hamirpur by C. Allen, and the Calpee Parganas by W. Muir. Traces remain of the office of lord of a thousand villages, described in Menu as the head of the Hindu revenue system, but chiefly in the Dekhan and other southern parts. These are called in Maharashtra, Sir-Desmukh, their districts are called Sirkar or Prant, and their hereditary register is the Sir-Despauldi. Below the pargana division is the lordship of ten or twenty towns, called Naikwari, Tarrat, etc., and the chain ends with individual villages.

REWAH, a town in Baghelcund, in Central India. It is in lat. 24° 31' 30" N., and long. 81° 20' E., and gives its name to a feudatory state; area, 13,000 sq. miles; population, 2,035,000. The founder of this principality was Bilagar Deo or Biag Deo. Leaving his own country in Gujerat in 580 A.D., ostensibly on a pilgrimage, he made himself master of the fort of Murpha, and eventually of most of the country from Kalpi to Chendalgarh, and married the daughter of the raja of Perhawan. In 1847, the ruling maharaja abolished sati throughout his dominions. For his services during the mutiny of 1857, the tracts of Sohagpur and Amarkantak, with the distinction of K.C.S.I. and a salute of 19 guns, were conferred in sovereignty on Raghuraj Singh. He holds a sanad of adoption. The state is rich in minerals and forest produce. The principal landholders are Brahmans, Thakurs, Kurmi, and Gond.—*Imp. Gaz.*

REWAKANTA forms the chief of a political circle in the Bombay Presidency. Total area, 4793 square miles; population (1872), 505,732.—*Imp. Gaz.*

RHABDOMANCY. Tacitus informs us that among the ancient Germans, who were originally Scythians, the prototype of Rhabdromancy was engraven on rods. The Chinese had also rods with similar inscriptions. The Arabs, before the birth of Mahomed, divined by bundles of arrows in the Kaba. Mahomed destroyed this practice.

RHACOPHORUS, the flying frog of Borneo, a species of Rhacophorus, has very long and fully webbed toes, which it spreads out when leaping. It is a tree frog, and by spreading out its membrane can descend from very high trees to the ground.—*Wallace.*

RHADIA, also Rhadika, mistress of Krishna.

RHAIRA GARH, the most important of the Ch'hattigarh feudatory states. It consists of four parganas or subdivisions, with 585 villages, mostly lying in the richest part of the Ch'hattigarh plain.

RHAMNÆÆ. *Lindl.* The buckthorn tribe of plants, comprising the genera Zizyphus, Berchemia, Sageretia, Ventilago, Rhamnus, Scutia, Hovenia, Colubrina, Gonania, Apteron, Helinus, Smytheca. *Hovenia dulcis*, *Thunb.*, is cultivated in the Himalayas for its edible fruit, and it has a light-coloured wood. *Ventilago maderaspatana*, *Gært.*, is valued for the red dye obtained from its root, and for the fibre of its bark. The genus *Rhamnus* furnishes both woods and dyes, and fruits and timber are obtained from *Zizyphus*. Several species of *rhamnus* grow in the Himalaya and China. In Europe the juices of the unripe fruits of *Rhamnus infectorius*, *catharticus*, and *virgatus*, known as Turkey or French berries, are used for dyeing leather yellow. When mixed with lime and evaporated to dryness, it forms the colour called sap-green. M. Rondot's Notice du Vert de Chine contains specimens of calico and silk dyed with green, and engravings of two plants, *Rhamnus utilis* and *Rhamnus chlorophorus*, from which it is derived. These plants were new to European cultivators; they are, however, allies of the *Rhamnus theeazans*, which has long been known as a tree from which the poorest class of Chinese pluck the leaves to use as a substitute for tea. The colour of the dyed silk is remarkably bright, a blue green,—one of that class of colours which increase in brilliance in the light. It contains, in fact, some immediate principle which can only be developed by light, and it was a nice task for chemists to discover what this is. M. Persoz says that light will have to be more and more regarded as an industrial agent; and of the Chinese green he remarks that it is sui generis, containing neither yellow nor blue. By experiments made at Lyons, it appears that six species of the European *rhamnus* will yield a green dye. See Dyes.

Rhamnus chlorophorus, *Lindley*, a superior green pigment, called Lo Kao, is prepared from the bark.

The bark of *R. utilis*, also from China, is similarly employed. It is particularly used for silk.—*Von Mueller.*

Rhamnus incanus, *Roxb.*, a tree of the Molucas, with small, greenish-yellow flowers.—*Roxb.* i. p. 603.

Rhamnus nabeca, *Forsk.* The fruit, called Nebek, is eaten, and the leaves are used for the purpose of washing dead bodies.—*Burton's Mecca*, ii. p. 105.

Rhamnus pauciflora and *R. staddo* in Abyssinia, yield an ardent spirit.

Rhamnus Persicus, *Boiss.*

Sherawane, . . . PUSHTU. | Kukai, Wurak, Tr. INDUS. Jaldar, . . . RAVI, SUTLEJ. | Nikki Kander, Nar, . .

A common shrub at 2000 to 5000 feet on the Salt Range and the low hills beyond the Indus. Its small black fruit is said to be sweet, but when eaten in excess to affect the head.

Rhamnus purpureus, *Royle.*

Kari, Tadrū, . . . CHENAB. | Kunje, Tunde, . . . RAVI. Memarari, . . . " | Tunana, Madana, . . . " Bal, Sinjal, . . . JHELUM. | Chatorni, . . . SUTLEJ.

This small tree is common up to near the Indus at from 4500 to 9500 feet. In Hazara its fruit is used as a purgative.—*Dr. J. L. Steuart*, p. 42.

Rhamnus utilis, affording a green dye in China.

Rhamnus virgatus, *Roxb.* i. p. 604.

Reteon, Sindrol, . . . BEAS. | Nar, Tadrū, Dadur, KANG. Mamral, . . . CHENAB. | Muttu, Romnak, SUTLEJ. Phipni, Dadru, JHELUM. | Niar, Chattr, . . . " Tudur, Seta patta,

